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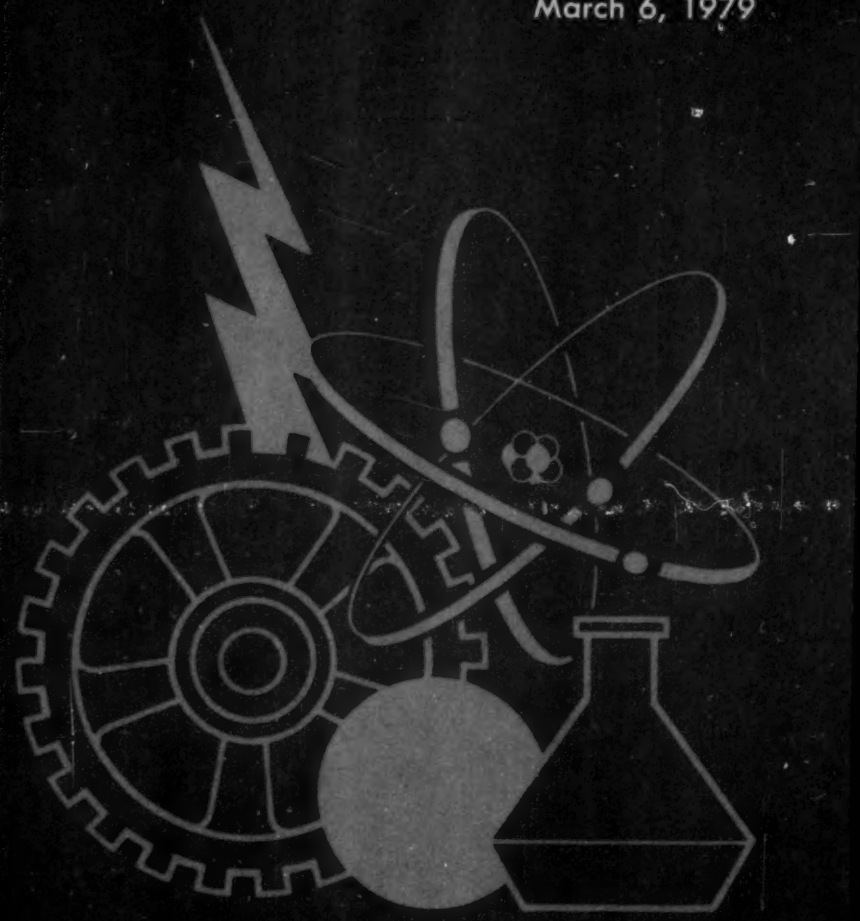

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OFFICIAL GAZETTE of the UNITED STATES PATENT and TRADEMARK OFFICE

March 6, 1979 Volume 980 Number 1

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT including the amounts of the fees thereunder and the States that may be designated in International applications consult the Notice entitled "Patent Cooperation Treaty (PCT) : Information for Prospective Applicants" appearing in the OFFICIAL GAZETTE of October 3, 1978.

DONALD W. BANNER.
Nov. 7, 1978. *Commissioner of Patents and Trademarks.*

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent and Trademark Office. Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds, should be furnished the Commissioner of Patents and Trademarks on or before March 30, 1979.

Curtis, Allen B., 5 McAlpine Ct., Silver Spring, Md. 20901
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LUTRELLE F. PARKER,
Feb. 5, 1979. *Chairman, Committee on Enrollment.*

Patent Suits

Notices under 35 U.S.C. 290: Patent Act of 1952

2,687,262, W. R. Custer, JET PROPELLED CHANNELED AIRCRAFT; **3,650,497,** same, **3,704,842,** same, CONTOURED STACK OF JET ENGINE WITH CHANNEL WING AIRCRAFT, **filed** Apr. 27, 1978, United States Court of Claims (Washington, D.C.), Doc. 181–78, *Willard R. Custer* v. *The United States.*

2,873,450, H. M. Unmann, SANITARY FIXTURE; **3,196,250,** same, HOT AIR BLOWER, **3,247,524,** same, HYGIENIC APPARATUS FOR USE ON TOILET BOWLS; **3,308,847,** same, SOLENOID-OPERATED, SHUT-OFF AND REGULATOR VALVE, **filed** Aug. 11, 1977, D.C., C.D. Calif. (Los Angeles), Doc. CV77–3022–FW, *Rusco Industries, Inc. etc. et al.* v. *Arnold Cohen et al.*

3,202,299, M. A. DeCuir, MOBILE GUY DERRICK AND COUNTER BALANCING CRANE, **filed** Aug. 23, 1972, D.C., E.D. Wis. (Milwaukee), Doc. 72–C–474, *American Hoist & Derrick Co.* v. *T. S. DeCuir et al.* Ordering the action dismissing, including counterclaims, Feb. 27, 1978.

2,891,375, Vandamme and Rouyer, APPARATUS FOR THE PRODUCTION OF HIGH-BULK YARN; **3,012,397,** H. Servage, METHOD OF MAKING HIGH-BULK YARNS; **3,165,881,** De Moncuit and Crouzet, PRODUCTION OF HIGH-BULK YARNS; **3,232,037,** H. Crouzet, FALSE-TWIST SPINDLE; **3,584,450,** H. Crouzet, PROCESS AND DEVICE FOR THE MANUFACTURE TEXTURED YARNS, **filed** June 17, 1977, D.C., N.D. Ohio (Cleveland), Doc. C77–662, *Milliken Research Corp.* v. *Bobbie Brooks.* **Same, filed** Apr. 14, 1977, D.C., W.D.N.C. (Charlotte), Doc. C–C–77–106, *Milliken Research Corp. et al.* v. *Kenville, Inc. et al.* **Same, filed** Feb. 14, 1977, D.C., W.D.N.C. (Charlotte), Doc. C–C–77–44, *Milliken Research Corp. et al.* v. *Regal Manufacturing Co.*

2,927,990, W. C. Johnson, SUBMERGED ARC WELDING; **3,022,412,** same, PROCESS AND APPARATUS FOR ARC WELDING; **3,060,307,** R. F. Arnoldy, APPARATUS AND METHOD FOR PRODUCING ALLOY WELDS; **3,076,888,** R. F. Arnoldy, METHOD OF PRODUCING WELD COATING FUSION WELD; **3,172,991,** R. F. Arnoldy, FEEDER FOR WELDS; **3,204,077,** R. F. Arnoldy, WELDING AND CASTING PROCESS; **3,260,834,** R. F. Arnoldy, WELDING METHOD AND APPARATUS; **3,264,445,** R. F. Arnoldy, WELD OVERLAY; **3,271,553,** W. C. Johnson, OVERLAY WELDING; **3,296,408,** R. F. Arnoldy, DUAL ARC WELDING; **3,358,115,** R. F. Arnoldy, OPEN ARC OR GAS SHIELDED GRANULAR WELDING; **3,402,459,** R. F. Arnoldy, METHOD OF MAKING ABRASION RESISTANT PLATE; **3,407,478,** R. F. Arnoldy, METHOD OF MAKING ABRASION RESISTANT PLATE; **3,494,749,** R. F. Arnoldy, ABRASION RESISTANT PLATE; **3,513,283,** R. F. Arnoldy, TANDEM ARC WELDING METHOD; **3,513,287,** R. F. Arnoldy, WELDING APPARATUS AND METHOD UTILIZING COMPRESSIBLE ELASTIC ELECTRODE; **3,513,288,** R. F. Arnoldy, ANNULAR ARC BULK WELDING APPARATUS AND METHOD; **3,516,156,** J. J. Steranko, CIRCUIT PACKAGE ASSEMBLY PROCESS; **3,517,156,** R. F. Arnoldy, WELDING APPARATUS AND METHOD; **3,588,432,** R. F. Arnoldy, STRIP BULKWELDING; **3,600,292,** R. F. Arnoldy, OSCILLATING STRIP BULKWELDING; **3,735,087,** R. F. Arnoldy, METHOD AND APPARATUS FOR ADJUSTABLE METERING, **filed** Feb. 13, 1978, D.C. Minn. (St. Paul), Doc. 3–78–79, *Chamfer Engineering Inc.* v. *Tapco International Inc. et al.*

3,012,397. (See 2,891,375.)

3,022,413. (See 2,927,990.)

3,041,322, V. K. Krieble, ANAEROBIC CURING COMPOSITIONS CONTAINING ACRYLIC ACID DIESTERS; **3,046,262,** same, ACCELERATED ANAEROBIC CURING COMPOSITIONS; **3,218,305,** same, ACCELERATED ANAEROBIC COMPOSITIONS AND METHOD OF USING SAME; **filed** June 30, 1977, D.C. Mass. (Boston), Doc. 77–1914–M, *Loctite Corp.* v. *Devcon Corp.* **Same, filed** June 24, 1977, D.C., N.D. Ill. (Chicago), Doc. 77c2278, *Loctite Corp.* v. *Fel-Pro, Inc.*

3,046,262. (See 3,041,322.)

3,060,307. (See 2,927,990.)

3,076,888. (See 2,927,990.)

3,099,516, R. M. Henrickson, METHOD OF MOLDING A FOAM PLASTIC HAVING SKINS ON SELECTED SURFACE PORTIONS; **3,523,464,** H.P.M. Quillery, STEERING WHEEL WITH PLASTIC FOAM SHEATHING; **3,523,918,** G. Gonzalez, METHOD OF FABRICATION OF MOLDED PARTS OF POLYURETHANE FOAM HAVING A NON-CELLULAR SURFACE LAYER, **filed** Mar. 13, 1978, D.C., E.D. Mich. (Detroit), Doc. 8–70563, *Sheller-Globe Corp. et al.* v. *Mobay Chemical Corp.*

3,115,959, M. L. Jaffe, GARMENT BAG, **filed** Mar. 15, 1978, D.C., C.D. Calif. (Los Angeles), Doc. CV78–0992–HP, *American Guard-It Mfg. Co.* v. *Armored Trunk Mfg. Co. etc. et al.*

3,133,610, W. L. Sheppard, SPEED GOVERNING SYSTEM, **filed** Nov. 13, 1978, D.C., E.D. Mich. (Detroit), Doc. 78–72884, *Eaton Corp.* v. *Rex Industries Inc. and William E. Sheppard.* **Same, filed** Nov. 14, 1978, D.C., E.D. Mich. (Detroit), Doc. 78–72929, *Rex Industries, Inc.* v. *Chrysler Corp.*

3,143,783, G. O. Gaetke, CONCRETE SLAB KEY JOINT FORMING STRIP; **3,288,042,** same, **filed** June 2, 1978, D.C., S.D. Calif. (San Diego), Doc. 78–0354–T, *The Burke Co.* v. *Superior Concrete Accessories, Inc.* Stipulation of dismissal and final order, Dec. 4, 1978.

3,165,881. (See 2,891,375.)

3,172,991. (See 2,927,990.)

3,176,894, R. E. Schoeneman, TAPE VELOCITY-FLUCTUATION DAMPER; **3,226,685,** Potter, Comstock, and Gabor, DIGITAL RECORDING SYSTEMS UTILIZING TERNARY, IN BIT BINARY AND OTHER SELF-CLOCKING FORMS, **filed** Mar. 24, 1978, United States Court of Claims (Washington, D.C.), Doc. 111–78, *Potter Instrument Co., Inc.* v. *The United States.*

3,181,495, E. C. Kiekhaefer, COOLANT SUPPLY AND EXHAUST DISCHARGE MEANS FOR INBOARD-OUTBOARD DRIVES; **3,434,449,** I. W. North, COMBINED IMPACT DAMPING AND POWER LIFT MECHANISM FOR AN OUT-

BOARD PROPULSION UNIT ASSEMBLY; **3,641,965,** R. C. Schmiedle, TRIM INDICATOR SYSTEM, **filed** Aug. 31, 1978, D.C., E.D. Wis. (Milwaukee), Doc. 78-569, *Brunswick Corp.* v. *Chrysler Corp.*

3,184,556, W. K. Larking, MINIATURE HEADSET-MICROPHONE ADAPTED FOR USE WITH A MASK, **filed** Feb. 13, 1978, United States Court of Claims (Washington, D.C.), Doc. 59-78, *Plantronics, Inc.* v. *The United States.*

3,194,609, L. Thurlow, SPROCKET AND CHAIN DRIVE, **filed** Nov. 25, 1975, D.C. N. Dak. (Fargo), Doc. A3-75-107, *Deere and Co.* v. *Lloyd Thurlow.* Judgment was entered pursuant to stipulation of counsel, that the plaintiff's complaint be dismissed without prejudice and that defendant's counterclaim be dismissed with prejudice, Aug. 31, 1978.

3,196,250. (See 2,875,450.)

3,204,077. (See 2,927,990.)

3,204,495, J. J. Matthews, INSULATION REMOVING TOOL, **3,572,189,** same, INSULATION JACKET SHAVING TOOL, **filed** Mar. 8, 1977, D.C., Conn. (Hartford), Doc. H-77-119, *Utility Tool Corp.* v. *Ideal Industries, Inc. et al.* Notice of dismissal under Rule 41 (a) (1) (i), June 6, 1978.

3,211,615, W. M. McLamore, ORAL ANTIDIABETIC COMPOSITION AND METHOD OF USE; **3,349,124,** same, ORAL ANTIDIABETIC AGENT, **filed** Nov. 2, 1978, D.C., S.D.N.Y., Doc. 78-C-5234, *Premo Pharmaceutical Lab, Inc.* v. *Pfizer Pharmaceuticals, Inc.*

3,214,836, R. F. West, COILABLE RULE, **3,216,117,** A. L. Stowell, same, **filed** July 11, 1977, D.C., S.D. Calif. (San Diego), Doc. 77-0469-GT, *The Stanley Works* v. *Stephen J. Watson, doing business as Tools-R-Us.* Judgment against defendant, July 31, 1978.

3,216,117. (See 3,214,836.)

3,218,305. (See 3,041,322.)

3,219,261, N. Laing, CROSS-FLOW FAN ROTOR SUPPORT MEANS; **3,305,665,** same, FORCED CIRCULATION ELECTRIC HEATER EMPLOYING CROSS-FLOW TYPE FAN; **3,308,268,** same, PORTABLE HAIR DRYER; **Re. 25,365,** B. E. Koln-Klettenberg, FANS, **filed** Mar. 1, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c583, *Illinois Fan Corp.* v. *Sperry Rand Corp.* Enter stipulation of dismissal, Mar. 22, 1976.

3,222,622, Curran and Berohn, WAVE FILTER COMPRISING PIEZOELECTRIC WAFER ELECTRODED TO DEFINE A PLURALITY OF RESONANT REGIONS INDEPENTLY OPERABLE WITHOUT SIGNIFICANT ELECTRO-MECHANICAL INTERACTION; **3,676,724,** Berlincourt and Pim, MULTI-ELEMENT PIEZOELECTRIC CIRCUIT COMPONENT, **filed** July 26, 1978, D.C. Calif. (Los Angeles), Doc. 78-2905, *Kyocera International Inc. and Kyoto Ceramic Co., Ltd.* v. *Vernitron Corp.*

3,226,685. (See 3,176,894.)

3,232,037. (See 2,891,375.)

3,247,524. (See 2,875,450.)

3,260,834. (See 2,927,990.)

3,264,445. (See 2,927,990.)

3,268,225, G. F. Kolbel, SPRING TYPE PHYSICAL EXERCISER; **3,746,339,** J. W. Cox, SPRING RESISTANT TYPE EXERCISING DEVICE, **filed** Oct. 19, 1978, D.C., E.D. Pa. (Philadelphia), Doc. 78-3483, *Compret B. V. Margrace Corp.* v. *Strawbridge & Clothier.*

3,271,553. (See 2,927,990.)

3,288,042. (See 3,143,783.)

3,296,408. (See 2,927,990.)

3,301,746, Sanford and Sisson, PROCESS FOR FORMING ABSORBENT PAPER BY IMPRINTING A FABRIC KNUCKLE PATTERN THEREON PRIOR TO DRYING AND PAPER THEREOF, **filed** Oct. 2, 1974, D.C., E.D. Wis. (Milwaukee), Doc. 74-447, *Procter & Gamble Company* v. *American Can Co.* Stipulation and order dismissing action, including counterclaim, without prejudice, Jan. 25, 1978.

3,303,938, A. Solomon, GARMENT RACK, **filed** Apr. 21, 1978, D.C. Pa. (Philadelphia). Doc. C.A. 78-1331, *Archie Solomon* v. *Fred Hill and Son Co.* Stipulation of dismissal without prejudice, July 24, 1978.

3,305,665. (See 3,219,261.)

3,308,268. (See 3,219,261.)

3,308,847. (See 2,875,450.)

3,314,377, C. A. Dehne, CONSTRUCTION FOR TRANSFERRING A CONVEYOR CARRIER BETWEEN POWER LINES, **filed** Aug. 8, 1973, D.C., E.D. Mich. (Detroit), Doc. 4-70172, *Jarvis B. Webb Co.* v. *Anchor Conveyors Div. of Standard Alliance Industries, Inc.* Defendant is hereby permanently enjoined from infringing or contributing to the infringement of said Patent 3,314,377 during the unexpired term thereof, June 5, 1978.

3,318,545, R. Tobey, WEB TRANSPORT SYSTEM; **3,379,948,** Lewis, Wang and Kleist, TAPE TRANSPORT DRIVE SYSTEM, **filed** Apr. 12, 1978, D.C., N.D. Calif. (San Francisco), Doc. C78-0797WWS, *Ampex Corp.* v. *Data General Corp.*

3,326,468, Stow and Cloud, EMPLOYING A PISTON ACTUATED HYDRAULIC CLUTCH; **3,637,138,** J. H. Rucker, TANK CLEANING MACHINE, **filed** Aug. 13, 1976, D.C. Del. (Wilmington), Doc. 76-269, *Sybron Corp. and Cloud Co.* v. *Rochem, Ltd.* Defendant is hereby enjoined from all further infringement of said patents by the making, using or selling of Rojet 30 and all other similar or equivalent tank cleaning equipment, June 20, 1978.

3,332,650, Urmetz and Carpenter, BOTTOM RING-WIPER STRIP ASSEMBLY METHOD OF MAKING IT; **3,477,493,** Charman, Jr., and Middaugh, Jr., METHOD FOR MAKING A REFRACTORY HOT TOP PANEL INSERT; **3,478,999,** Charman, Jr. and Middaugh, Jr., REFRACTORY PANEL UNIT WITH HINGE MEANS AND FRANGIBLE PORTIONS, **filed** June 26, 1972, D.C., E.D. Wis. (Milwaukee), Doc. 72-C-376, *Oglebay Norton Co.* v. *Universal Refractories Corp.* Final judgment entered (MLG), plaintiff's U.S. Patents 3,332,650, 3,477,493, and 3,478,999 are declared valid and infringed by defendant corporations, or other entities in participation with defendant are permanently enjoined from infringing the aforesaid patents. Amended judgment, dated Aug. 8, 1977, and accompanying stay dated Aug. 29, 1977 are superseded by this final judgment and defendant's supersedeas bon is released and discharged.

3,333,373, Taylor and Brigham, PORTABLE FOLDING CAMPING CABIN OR HOUSE, **filed** Apr. 27, 1978, D.C.N.J. (Newark). Doc. 78-882, *Warren E. Avis* v. *Vornado, Inc.* Order staying action and directing that it be administratively terminated pending a decision by U.S. Patent and Trademark Office, filed Dec. 7, 1978.

3,334,752, P. R. Matravers, DUAL MEDIA FILTER ELEMENT, **filed** Apr. 30, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c1032, *The Carborundum Co.* v. *Purolator Inc.* On stipulation of parties, all matters in controversy having been resolved order cause is hereby dismissed with prejudice, Feb. 13, 1975.

3,343,375, L. K. Quick, LATENT HEAT REFRIGERATION DEFROSTING SYSTEM, **filed** July 7, 1978, D.C. Del. (Wilmington), Doc. C-78-290, *Huseman Refrigerator Co.* v. *Tyler Refrigeration Corp.*

3,346,976, Curlett and Gurries, LEVEL CONTROL MECHANISM FOR ROAD BUILDING MACHINES, **filed** June 20, 1977, D.C., W.D. Okla. (Oklahoma City), Doc. C77-0584-D, *CMI Corp.* v. *Barco Manufacturing Co.* Plaintiff's action against defendant is dismissed with prejudice, Oct. 30, 1978.

3,349,124. (See 3,211,615.)

3,358,115. (See 2,927,990.)

3,361,303, C. Jacuzzi, LIQUID AND PASTE DISPENSER, **filed** Jan. 20, 1975, D.C., N.D. Ill. (Chicago), Doc. 75c192, *Jacuzzi Bros. Inc.* v. *Agent, c/o CT Corporation System.* On motion of defendant, cause and case dismissed for want of subject matter jurisdiction, May 16, 1975.

3,371,694, E. W. Miller, COMBINATION SCOOP AND CUTTING BOARD; **D. 237,931,** C. Brandenfels, KITCHEN ISLAND TABLE, **filed** Jan. 5, 1978, D.C. Oreg. (Portland), Doc. C78-006, *H. T. Products, Inc.* v. *National Silver Co.* Consent judgment and decree was entered on Dec. 8, 1978.

3,375,679, W. F. Helsel, REFRIGERATOR-FREEZER CONSTRUCTION, **filed** Dec. 26, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c3742, *Fedders Corp.* v. *Amana Refrigeration, Inc.* On stipulation of the parties, case and cause dismissed without prejudice, June 17, 1975.

3,377,888, J. B. Sponsler, EXTENSION DEVICE FOR HAND DRILL, **filed** Mar. 22, 1978, D.C. Minn. (Minneapolis), Doc. 4-78-C-116, *John B. Sponsler* v. *Milwaukee Electric Tool Corp.* Stipulation and order of dismissal with prejudice as to the complaint and without prejudice as to the counterclaim, July 6, 1978.

3,379,948. (See 3,318,545.)

3,401,494, D. A. Anderson, METAL STUD FOR POLYSTYRENE FOAM SHEETS, **filed** May 31, 1978, D.C. Ariz. (Phoenix), Doc. C78–437–PhX, *Arizona Diversified Products, Inc.* v. *W. R. Grace & Co.*

3,402,459. (See 2,927,990.)

3,407,478. (See 2,927,990.)

3,415,129, R. D. Stamm, DUAL BAND PUSHBUTTON TUNER; **3,463,017,** Stamm and Smart, same, **filed** Mar. 18, 1977, D.C., E.D. La. (New Orleans), Doc. 77–852, *General Instrument Corp.* v. *Edward Conrad, doing business as Conrad Enterprises.*

3,434,449. (See 3,818,495.)

3,441,393, Finneran, Mayo, Multhaup, and Smith, PROCESS FOR THE PRODUCTION OF HYDROGEN-RICH GAS, **filed** Apr. 23, 1976, D.C., W.D. Okla. (Oklahoma City), Doc. C76–0332, *Fluor Corp.* v. *Pullman Incorporated.* Defendant's motion to transfer granted and case transferred to Southern District of Georgia, Oct. 12, 1977.

3,446,199, A. L. Saveca, SPRING ACTUATED BALL PROJECTING DEVICE, **filed** Aug. 8, 1978, D.C. Minn. (Minneapolis), Doc. 4–78–C–328, *K-Tel International Inc.* v. *Arthur L. Saveca.*

3,451,161, J. H. Lemelson, TOY TRACK AND VEHICLE THEREFOR; **3,758,982,** Lemelson and Nutting, ACTIVITY DOLL, **filed** Dec. 8, 1977, D.C., N.D. Ill. (Chicago), Doc. 77c4558, *Jerome H. Lemelson* v. *General Mills Inc. et al.* **Same, filed** July 13, 1978, D.C., S.D.N.Y., Doc. 78–C–3172, *Jerome H. Lemelson* v. *Lesney Products Corp. and Lesney Products & Co. Ltd.*

3,452,447, T. A. Gardner, WEB POSITIONING MEANS AND METHOD, **filed** June 1, 1978, D.C., E.D. Wis. (Milwaukee), Doc. 78–347, *Thomas A. Gardner* v. *TEC System, Inc.*

3,463,017. (See 3,415,129.)

3,471,017, P. G. Kalman, FILTERING PROCESS AND APPARATUS; **3,856,680,** J. T. Elmore, AUTOMATIC SCREEN CHANGER FOR EXTRUDING PROCESSES, **filed** Nov. 7, 1978, D.C., E.D. Wis. (Milwaukee), Doc. 78–721, *Peter Gabor Kalman* v. *Kimberly-Clark Corp.*

3,475,926, J. E. Ruckstuhl, RAISED WARP KNIT FABRICS, **filed** June 6, 1978, D.C., S.D.N.Y., Doc. 78–C–2570 WCC, *Terlinden & Co.* v. *George J. Zahringer Corp.*

3,477,493. (See 3,332,659.)

3,478,999. (See 3,332,659.)

3,485,599, Richardson and Hardisty, RAPID IGNITION CHARCOAL BRIQUETTE, **filed** Feb. 8, 1977, D.C., W.D. Ark. (Texarkana), Doc. 77–4017, *John A. Hardisty et al.* v. *Char-Lite Briquette Inc. and Pine-O-Pine Co.* Order dated May 19, 1978, entered after trial to court, finding plaintiffs have judgment against defendants.

3,493,879, G. R. Stanley, HIGH POWER HIGH FIDELITY SOLID STATE AMPLIFIER, **filed** Sept. 6, 1972, D.C., N.D. Ind. (South Bend), Doc. 72–S–172, *International Radio & Electronics Corp.* v. *Bruno Eidietis and David Liss, doing business as Audio Specialists.* Plaintiff's complaint and defendant's counter claim be and is hereby dismissed without prejudice, Nov. 18, 1977.

3,494,749. (See 2,927,990.)

3,495,866, L. J. Bontrager, COLLAPSIBLE TRAILER, **filed** July 25, 1975, D.C., N.D. Ind. (South Bend), Doc. S75–131, *Lloyd J. Bontrager* v. *Steury Corporation.* Claims 1, 2, 6, 7, and 10 of U.S. Letters Patent No. 3,495,866 are invalid, void and unenforceable, June 14, 1978.

3,495,868, H. J. W. Vanderminden III, FOLDABLE CHAIR, **filed** June 1, 1978, D.C. Conn. (Bridgeport), Doc. B–78–208, *The Telescope Folding Furniture Co., Inc.* v. *Star Brite Furniture Corp.*

3,507,495, Tucker, Fracalossi, Crawford and Bollers, LACROSSE STICK; **3,822,062,** Tucker and Crawford, MESH WEBBING FOR A LACROSSE STICK, **filed** July 24, 1978, D.C. Md. (Baltimore), Doc. K–78–1341, *Wm. T. Burnett & Co., Inc.* v. *American Insulation & Stamping Co., Inc.*

3,509,833, R. L. Cook, HARD FACED CERAMIC AND PLASTIC ARMOR; **3,516,898,** same, HARD FACED PLASTIC ARMOR, **filed** May 15, 1978, United States Court of Claims (District of Columbia), Doc. 177–78, *Goodyear Aerospace Corp.* v. *The United States.*

3,513,283. (See 2,927,990.)

3,513,287. (See 2,927,990.)

3,513,288. (See 2,927,990.)

3,516,156. (See 2,927,990.)

3,516,898. (See 3,509,833.)

3,517,156. (See 2,927,990.)

3,519,130, W. Jachna, APPARATUS FOR CLASSIFYING OF FINE-GRAINED SOLIDS IN WET CONDITIONS, **filed** Nov. 30, 1978, D.C., N.D. Ill. (Chicago), Doc. 78c4764, *Biruo Projektow Zakladow Przerobki Mechanicanej Wegla* v. *UOP Inc.*

3,523,464. (See 3,099,516.)

3,523,918. (See 3,099,516.)

3,528,215, L. R. Johnson, RESTRAINING DEVICE, **filed** Aug. 28, 1978, D.C., W.D. Tex. (Austin), Doc. A–78–CA–0188, *Lee R. Johnson* v. *Callahan General Store, Inc.*

3,537,146, J. E. Caveney, INTEGRAL ONE-PIECE CABLE TIE; **3,660,869,** Caveney and Moody, ONE-PIECE CABLE TIE, **filed** Dec. 19, 1978, D.C., E.D. Wis. (Milwaukee), Doc. 78–C–812, *Panduit Corp.* v. *Tyton Corp.* **Same, filed** Dec. 14, 1978, D.C., N.D. Ill. (Chicago), Doc. 78c4973, *Panduit Corp.* v. *Dennison Manufacturing Co., Inc.*

3,545,445, Freedman, Vale and Vale, BRASSIERES, **filed** May 23, 1978, D.C., S.D.N.Y., Doc. 78–C–2397, *La Trique Brassiere Co., Inc.* v. *Aldens, Inc.*

3,572,189. (See 3,204,495.)

3,584,450. (See 2,891,375.)

3,588,432. (See 2,927,990.)

3,609,292. (See 2,927,990.)

3,636,903, Anderson and Munn, RECTANGULAR-DUCT FORMING MACHINE; **3,722,443,** same, METHOD OF FORMING A RECTANGULAR HEAT DUCT; **3,757,830,** same, RECTANGULAR AIR DUCT, **filed** May 16, 1972, D.C., N.D. Ind. (South Bend), Doc. 72–S102, *Manufacturers Systems, Inc.* v. *ADM Industries, Inc. et al.* Judgment is entered for defendants and against plaintiff, Feb. 16, 1978.

3,637,138. (See 3,326,468.)

3,641,965. (See 3,181,495.)

3,650,497. (See 2,687,262.)

3,659,284, W. T. Rusch, TELEVISION GAMING APPARATUS; **3,659,285,** Baer, Rusch, and Harrison, TELEVISION GAMING APPARATUS AND METHOD; **3,728,480,** R. H. Baer, TELEVISION GAMING AND TRAINING APPARATUS; **Re. 28,507,** W. T. Rusch, TELEVISION GAMING APPARATUS; **Re. 28,598,** Baer, Rusch, and Harrison, TELEVISION GAMING APPARATUS AND METHOD, **filed** Dec. 9, 1976, D.C., S.D. Fla. (Fort Lauderdale), Doc. 76–2221–C–NCR, *The Magnavox Co. et al.* v. *Allied Leisure Industries et al.* **Same, filed** Aug. 25, 1977, D.C., N.D. Ill. (Chicago), Doc. 77c3159, *The Magnavox Co. et al.* v. *APF Electronics, Inc. et al.*

3,659,285. (See 3,659,284.)

3,660,869. (See 3,537,146.)

3,676,724. (See 3,222,622.)

3,704,519, G. Lystager, METHOD TO PREPARE A DENTAL MODEL; **3,932,939,** B. Weissman, PIN ARRANGEMENT FOR PROSTHODONTIC CASTS; **Reg. No. 1,001,824** (PINDEX), Whaledent, Inc., **filed** May 18, 1978, D.C., S.D.N.Y., Doc. 78–C–2310, *Ipco Hospital Supply Corp.* v. *Health Co., Inc. and Health Co. Dental Supply.*

3,704,842. (See 2,687,262.)

3,713,127, Keledy and Notvest, ACOUSTIC EMISSION CRACK MONITOR; **3,824,377,** K. R. Notvest, ACOUSTIC EMISSION SPOT WELDING CONTROLLER, **filed** Sept. 7, 1978, D.C.N.J. (Trenton), Doc. C–78–2170, *Trodyne Corp.* v. *Physical Acoustics Corp. et al.*

3,715,718, R. A. Astengo, GROUND PROXIMITY WARNING SYSTEM UTILIZING RADIO AND BAROMETRIC ALTIMETER COMBINATION, **filed** Mar. 9, 1977, D.C., W.D. Wash. (Seattle), Doc. C77–164S, *Sunstrand Data Control* v. *Ralph A. Astengo.*

3,722,443. (See 3,636,903.)

3,724,916, E. A. Hirzel, CONTROLLED WHEEL BRAKING SYSTEM; **3,729,234,** E. A. Hirzel, BRAKE CONTROL MODULATOR, **filed** June 6, 1977, D.C., N.D. Ohio (Akron), Doc. C77–207–A, *Crane Co.* v. *The Goodyear Tire & Rubber Co.*

3,728,480. (See 3,659,284.)

3,729,142, Rangel-Garza and Leal-Diaz, DRIPPERS FOR IRRIGATION, **filed** Dec. 26, 1974, D.C., M.D. Fla. (Tampa), Doc. 74-796-C T.K., *Javier Rangel-Garza, Jaime Leal-Diaz, and Balm Grove Service, Inc.* v. *Tom Cecchettini and Agrotechnics, Inc.* Joint stipulation of voluntary dismissal without prejudice with order granting same, Aug. 28, 1978.

3,729,234. (See 3,724,916.)

3,731,414, Murphy, Burford, and Kaponga, ANIMAL EAR TAGS AND APPLICATORS THEREFOR, **filed** Nov. 22, 1978, D.C., N.D. Tex. (Dallas), Doc. CA 3-78-1420-C, *Allflex Tag Co., Inc. et al.* v. *Y-Tec Corp.*

3,735,087. (See 2,927,990.)

3,736,575, D. J. Mallerick, Jr., SINGLE LINE PER BIT ASYNCHRONOUS CIRCUIT AND SYSTEM; **3,757,231,** C. Austini, ASYNCHRONOUS CIRCUIT AND SYSTEM, **filed** May 12, 1978, D.C.N.J. (Newark), Doc. 78-1042, *Dyad Systems, Inc. et al.* v. *Ragen Semiconductor, Inc. et al.*

3,745,026, Hansen, Ray, and Reimer, CARCASS CHILLING PROCESS, **filed** July 19, 1978, D.C., E.D. Pa. (Philadelphia), Doc. 78-2444, *Bluebird, Inc. et al.* v. *Swift and Co.* **Same, filed** June 7, 1978, D.C., W.D. Okla. (Oklahoma City), Doc. C78-0578-D, *Swift & Co.* v. *Wilson Foods Corp.*

3,746,339. (See 3,268,225.)

3,757,087, D.P.E. Barnard, HEATING ELEMENTS, **filed** June 12, 1978, D.C., N.D. Calif. (San Francisco), Doc. C78-1289-WAI, *Interdynamics Inc. et al.* v. *Products International Co., Inc. et al.*

3,757,194, Weber and Pugh, CORDLESS POWER TOOL HAVING REMOVABLE BATTERY PACK, **filed** Apr. 22, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c1102, *The Black & Decker Manufacturing Co.* v. *Disston, Inc.* On defendants motion cause ordered transferred to the Western District of Pennsylvania, Nov. 18, 1974.

3,757,231. (See 3,736,575.)

3,757,825, Givens and Spero, PRESSURE EQUALIZING DEVICE FOR FLUID PRESSURE SYSTEMS, **filed** Mar. 30, 1978, D.C., S.D. Calif. (San Diego), Doc. 78-0205-S, *Scot Tee* v. *Robert Mitton.*

3,757,830. (See 3,636,903.)

3,758,982. (See 3,451,161).

3,761,647, Nemoto and Honma, CARTRIDGE FOR DETECTING VIBRATIONS REPRESENTING STEREOPHONIC SOUND; **4,075,418,** same, STEREOPHONIC PICKUP CARTRIDGE, **filed** Sept. 28, 1978, D.C. Del. (Wilmington), Doc. 78-400, *Atlantis Sound, Inc.* v. *Kabushiki Kaisha Audio-Technica.*

3,761,647. (See 4,075,418.)

3,769,919, P. P. Thomas, EXTENSIBLE TABLE, **filed** Feb. 3, 1978, D.C.N.C. (Greensboro), Doc. C-78-46-G, *Winzeler Stamping Co.* v. *Allmark Inc. et al.* Defendants permanently enjoined against infringing or contributing to the infringement of United States Letters Patent No. 3,769,919.

3,822,062. (See 3,507,495.)

3,824,377. (See 3,713,127.)

3,932,939. (See 3,704,519.)

Re. 25,365. (See 3,219,261.)

Re. 28,507. (See 3,659,284.)

Re. 28,598. (See 3,659,284.)

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,313,443, Re. S.N. 973,371, Filed Dec. 26, 1978, Cl. 220/219, FLOATING COVER FOR A LIQUID STORAGE RESERVOIR, Howard S. Dial, et al., Owner of Record: *Arthur M. Lockhart and Howard D. Webb, Long Beach, Calif.,* Attorney or Agent: Francis A. Utecht, et al., Ex. Gp.: 241

3,484,107, Re. S.N. 974,268, Filed Dec. 29, 1978, Cl. 273/54 C, MULTIPLE ALLEY BOWLING GAME SCORING SYSTEM INCLUDING LANE SEQUENCER, Paul R. Hoffman, et al., Owner of Record: *Brunswick Corporation, Skokie, Ill.,* Attorney or Agent: Ernest A. Wegner, et al., Ex. Gp.: 334

3,550,939, Re. S.N. 974,269, Filed Dec. 29, 1978, Cl. 273/54 C, ELECTRONIC SCORER FOR BOWLING GAMES, Jerome F. Walker, Owner of Record: *Brunswick Corporation, Skokie, Ill.,* Attorney or Agent: Ernest A. Wegner, et al., Ex. Gp.: 334

3,649,014, Re. S.N. 974,266, Filed Dec. 29, 1978, Cl. 273/54 C, SPLIT DETECTING AND SCORING SYSTEM, Paul R. Hoffman, Owner of Record: *Brunswick Corporation, Skokie, Ill.,* Attorney or Agent: Ernest A. Wegner, et al., Ex. Gp.: 334

3,649,015, Re. S.N. 974,267, Filed Dec. 29, 1978, Cl. 273/54 C, SPLIT DETECTION SYSTEM, Eugene E. Reynolds, Owner of Record: *Brunswick Corporation, Skokie, Ill.,* Attorney or Agent: Ernest A. Wegner, et al., Ex. Gp.: 334

3,990,026, Re. S.N. 972,234, Filed Dec. 22, 1978, Cl. 333/98 R, DIPOLE MODE ELECTROMAGNETIC WAVE GUIDES, Harold Everard Monteagle Barlow, Owner of Record: *National Research Development Corporation, London, England,* Attorney or Agent: John W. Malley, et al., Ex. Gp.: 250

4,012,376, Re. S.N. 970,025, Filed Dec. 15, 1978, Cl. 542/447, PHOTOSENSITIVE COLORANT MATERIALS, Hal E. Wright, Owner of Record: *Eastman Kodak Co., Rochester, N.Y.,* Attorney or Agent: John R. Everett, et al., Ex. Gp.: 117

4,040,831, Re. S.N. 972,432, Filed Dec. 22, 1978, Cl. 96/35.1, METHOD FOR THE PREPARATION OF RELIEF STRUCTURES, Roland Rubner, et al., Owner of Record: *Siemens Aktiengesellschaft, Munchen, Germany,* Attorney or Agent: Hugh A. Chapin, et al., Ex. Gp.: 166

4,061,770, Re. S.N. 968,003, Filed Dec. 11, 1978, Cl. 424/304, FLOWABLE, AQUEOUS PESTICIDE COMPOSITIONS OF IMPROVED ACTIVITY, Alfred F. Marks, Owner of Record: *Diamond Shamrock Corporation, Cleveland, Ohio,* Attorney or Agent: Timothy E. Tinkler, et al., Ex. Gp.: 125

PATENT NOTICES

Certificates of Correction for the Week of Mar. 6, 1979

D. 248,673	4,093,983	4,105,702	4,116,775
D. 248,854	4,096,010	4,105,846	4,117,197
3,690,425	4,096,607	4,105,900	4,117,323
3,769,775	4,096,621	4,106,051	4,117,758
3,897,245	4,096,696	4,106,837	4,117,884
3,898,226	4,096,935	4,106,877	4,118,174
3,900,494	4,097,212	4,107,014	4,118,416
3,901,530	4,097,295	4,107,037	4,118,460
3,910,928	4,097,504	4,107,319	4,119,047
3,935,218	4,097,656	4,107,410	4,119,064
3,996,075	4,098,477	4,107,460	4,119,486
4,030,708	4,098,654	4,107,580	4,119,585
4,032,703	4,098,796	4,107,662	4,119,640
4,033,904	4,098,947	4,107,712	4,119,765
4,050,552	4,099,185	4,107,749	4,120,010
4,053,611	4,099,661	4,107,786	4,120,129
4,063,068	4,099,663	4,107,796	4,120,149
4,064,233	4,099,795	4,108,238	4,120,203
4,068,947	4,100,344	4,108,254	4,120,554
4,069,261	4,100,701	4,108,279	4,120,699
4,074,601	4,100,776	4,108,376	4,120,747
4,075,970	4,100,811	4,108,531	4,120,944
4,078,619	4,100,923	4,109,098	4,121,203
4,079,340	4,101,324	4,109,261	4,121,228
4,080,490	4,101,346	4,109,443	4,121,508
4,082,630	4,101,504	4,109,643	4,122,101
4,084,150	4,101,554	4,110,485	4,122,161
4,085,110	4,101,757	4,110,724	4,122,391
4,085,483	4,101,786	4,110,777	4,122,674
4,086,095	4,101,826	4,111,177	4,122,882
4,086,303	4,101,881	4,111,245	4,122,884
4,087,002	4,101,909	4,111,353	4,123,027
4,087,276	4,102,178	4,111,581	4,123,372
4,087,330	4,102,813	4,111,751	4,123,826
4,088,374	4,103,099	4,112,048	4,124,182
4,090,017	4,103,306	4,112,097	4,124,454
4,090,581	4,103,490	4,112,104	4,124,659
4,091,285	4,103,753	4,112,287	4,125,001
4,091,286	4,103,963	4,112,454	4,125,548
4,091,320	4,104,140	4,112,465	4,126,389
4,092,067	4,104,170	4,112,502	4,126,510
4,092,139	4,104,173	4,112,544	4,127,488
4,092,153	4,104,319	4,112,653	4,127,507
4,092,242	4,104,373	4,113,139	4,127,951
4,092,462	4,104,417	4,113,286	4,128,161
4,092,674	4,104,512	4,113,459	4,128,177
4,093,469	4,104,622	4,113,542	4,129,176
4,093,532	4,104,723	4,113,726	4,130,137
4,093,561	4,105,023	4,113,856	4,130,388
4,093,882	4,105,124	4,113,882	4,130,555
4,095,367	4,105,299	4,113,915	4,130,661
4,095,401	4,105,597	4,114,071	4,130,813
4,095,494	4,105,696	4,115,392	

Disclaimers

3,319,872.—*Irving C. Beckman* and *Alex Morrell Beerbohm*, Huntington Woods, Mich. MAILER. Patent dated May 16, 1967. Disclaimer filed Jan. 15, 1979, by the assignee, *2B System Corporation*.

Hereby enters this disclaimer to all claims of said patent.

3,666,202.—*John W. Wenner*, Boulder, Colo. SINGLE REEL MAGNETIC TAPE UNIT. Patent dated May 30, 1972. Disclaimer filed Jan. 12, 1979, by the assignee, *International Business Machines Corporation*.

Hereby enters this disclaimer to claims 1–3 of said patent.

3,797,993.—*Kurt Heldt, Kronberg and Hans Lappe*, Frankfurt Germany. TUNNEL KILN. Patent dated Mar. 19, 1974. Disclaimer filed Dec. 12, 1978, by the assignee, *Deutsche Gold- und Silber-Scheideanstalt vormals Roessler*.

Hereby enters this disclaimer to all claims of said patent.

3,802,751.—*Marvin E. Beyers*, Peoria, Ill. CONTOURED TRACK SHOE FOR SEALED TRACK BELTS. Patent dated Apr. 9, 1974. Disclaimer filed Dec. 11, 1978, by the assignee, *Caterpillar Tractor Co.*

Hereby enters this disclaimer to claims 8–10 of said patent.

3,899,220.—*Charles E. Grawey*, Peoria, *Robert W. Untz*, Hanna City, and *Marvin E. Beyers*, Peoria, Ill. FLEXIBLE SEALED TRACK BELT. Patent dated Aug. 12, 1975. Disclaimer filed Feb. 1, 1979, by the assignee, *Caterpillar Tractor Co.*

Hereby enters this disclaimer to the entire remaining term of said patent subsequent to Apr. 9, 1991.

3,900,540.—*William A. Robba*, Shoreham, N.Y. and *Robert W. Froberg*, Easton, Pa. METHOD FOR MAKING A FILM OF REFRACTORY MATERIAL HAVING BI-DIRECTIONAL REINFORCING PROPERTIES. Patent dated Aug. 19, 1975. Disclaimer filed Jan. 4, 1979, by the assignee, *Pfizer Inc.*

Hereby enters this disclaimer to claims 1 and 3 of said patent.

3,973,412.—*Howard Price Miles*, Cwmbran, England. TORQUE-LIMITING COUPLINGS. Patent dated Aug. 10, 1976. Disclaimer filed Nov. 30, 1978, by the inventor.

Hereby enters this disclaimer to claims 1, 10 and 11 of said patent.

4,018,915.—*Shosuke Okamoto*, Kobe, *Ryoji Kikumoto* and *Kazuo Ohkubo*, Tokyo, *Tohru Tezuka*, Yokohama, *Shinji Tonomura*, Tokyo, *Yoshikuni Tamao*, Yokohama, and *Akiko Hijikata*, Kobe, Japan. N^2-ALKOXYNAPHTHALENESULFONYL-L-ARGININAMIDES AND THE PHARMACEUTICALLY ACCEPTABLE SALTS THEREOF. Patent dated Apr. 19, 1977. Disclaimer filed Oct. 24, 1978, by the assignee, *Mitsubishi Chemical Industries Limited*.

Hereby enters this disclaimer to claim 4 of said patent.

4,101,653.—*Shosuke Okamoto* and *Akiko Hijikata*, Kobe, *Ryoji Kikumoto*, Tokyo, *Yoshikuni Tamao*, Yokohama, *Kazuo Ohkubo*, Tokyo, *Tohru Tezuka*, Yokohama, and *Shinji Tonomura*, Tokyo, Japan. N^2-ARYLSULFONYL-L-ARGININAMIDES AND THE PHARMACEUTICALLY ACCEPTABLE SALTS THEREOF. Patent dated July 18, 1978. Disclaimer filed Dec. 28, 1978, by the assignee, *Mitsubishi Chemical Corporation, Ltd.*

Hereby enters this disclaimer to the entire remaining term of said patent subsequent July 19, 1994.

Erratum

4,033,723.—*Morris Lincoln Givner*, Pierefonds and *Guenther Schilling*, Westmount, Quebec, Canada. PREGNANCY TEST DEVICE. In the notice of Disclaimers appearing on page 89 in the OFFICIAL GAZETTE of May 16, 1978, all claims of said patent were erroneously disclaimed and should be corrected to read as follows: All claims of said patent in favor of Patent No. 4,123,224, are disclaimed.

Disclaimers and Dedications

3,373,612.—*William H. Thompson*, Escondido, and *William J. Glasson*, Solana Beach, Calif. MECHANICAL GOLFER. Patent dated Mar. 19, 1968. Disclaimer and dedication filed Dec. 28, 1978, by the assignee, *Acushnet Company*.

Hereby disclaims and dedicates to the public the entire remaining term of said patent.

3,633,643.—*Emerson J. Stilwell*, Westerville, Ohio. PROTECTIVE COVER FOR SHIPPING CASKETS OR THE LIKE. Patent dated Jan. 11, 1972. Disclaimer and dedication filed Dec. 19, 1978, by the assignee, *National Car Rental System, Inc.*

Hereby disclaims and dedicates to the public the entire remaining term of said patent.

Patents Available for Licensing or Sale

D. 239,564. STRINGED MUSICAL INSTRUMENT. Lee Bevill, 5458 E. Mountain St., Stone Mountain, Ga. 30383.

3,469,982. PROCESS FOR MAKING PHOTORESISTS. Jack Richard Celeste, 40 Cameron Court, Freehold, N.J. 07728. Inquiries respecting a license under this patent may be directed to: Mr. Edwin Tocker, Legal Department, E. I. du Pont de Nemours & Company, Wilmington, Del. 19898.

4,081,993. DEVICE FOR MEASURING THE MAGNITUDE AND DIRECTION OF COMPRESSION FORCES. Bergwerksverband GmbH, Postface 13, 01 40, Germany, Correspondence to: Michael J. Striker, 360 Lexington Ave., New York, N.Y. 10017.

4,116,326. VIBRATING CONVEYOR BAR CLEANING SYSTEM, David B. Tuman, Route 2, Box 2432, Oroville, Calif. 95965.

4,133,060. ODORLESS TOILET, Wayne Webb, 7531 Mountain Ave., Orangevale, Calif. 95662.

4,133,480. CONVENIENCE ANTI-WHEEL SPIN DEVICE FOR RUBBER-TIRED VEHICLES INCLUDING A WINCHING ACCESSORY. Thorvald G. Granryd, 825 N. Sheridan, Lake Forest, Ill. 60045.

The General Electric Company is prepared to grant nonexclusive licenses under the following patents on reasonable terms to domestic manufacturers.

Application for licenses may be addressed to Patent Counsel, Contractor Equipment Business Division, General Electric Company, 1285 Boston Ave., Bldg. 21–EW, Bridgeport, Conn. 06602.

3,704,641. AUTOMATIC TOOL SENSING SENSOR.

3,711,783. DIVISION WITH PULSE WIDTH MODULATION FOR ADAPTIVE CONTROL.

3,883,847. ANTI-BACKLASH SERVOMOTOR DRIVE SYSTEM.

3,889,105. AUTOMATIC BACK UP OF A NUMERICAL CONTROL.

Applications for license under the following patents should be addressed to: Patent Counsel, Speed Variator Products Operation, General Electric Company, 1501 Roanoke Blvd., Salem, Va. 24153.

3,331,008. TRANSFORMER COUPLED TIME RATIO CONTROLLED CIRCUITS.

3,434,030. TRANSFORMER COUPLED TIME RATIO CONTROLLED CIRCUITS.

3,532,947. DIRECT CURRENT PULSE CONTROL CIRCUIT FOR POLYPHASE SYNCHRONOUS MOTOR.

3,582,737. SPEED CONTROL OF A WYE-CONNECTED INDUCTION MOTOR UTILIZING DELTA CONNECTED TRIGGERABLE BICONDUCTIVE DEVICES.

Applications for license may be addressed to the General Electric Company, Transportation Systems Business Division, 2901 East Lake Road, Erie, Pa. 16531.

Re. 29,579. DUAL SOURCE AUXILIARY POWER SUPPLY.

4,080,845. SHAPED DISC FLYWHEEL.

4,102,221. CROSS-PLY COMPOSITE FLYWHEEL.

Application for license may be addressed to the General Electric Company Division Patent Counsel, Housewares and Audio Business Division, 1285 Boston Ave., Bridgeport, Conn. 06602.

4,116,363. SECURING MEANS FOR COOKING VESSELS.

Applications for license may be addressed to: Division Patent Counsel, Switchgear & Distribution Transformer Division, General Electric Company, 6901 Elmwood Ave., Philadelphia, Pa. 19142.

3,960,433. SHIELDED POWER CABLE SEPARABLE CONNECTOR HAVING CONDUCTING CONTACT ROD WITH A DEVELED SHOULDER OVERLAPPED BY INSULATING FOLLOWER MATERIAL.

Applications for license may be addressed to Patent Counsel, Gas Turbine Division, General Electric Company, 1 River Road, Building #500, Room 218, Schenectady, N.Y. 12345.

4,040,159. METHOD OF MANUFACTURE OF COOLED AIRFOIL-SHAPED BUCKET.

4,111,604. BUCKET TIP CONSTRUCTION FOR OPEN CIRCUIT LIQUID-COOLED TURBINES.

The RCA Corporation offers to grant non-exclusive licenses on reasonable terms and conditions under the patents listed below. Inquiries respecting licenses under RCA patents should be addressed to RCA Corporation, Staff Vice President, Domestic Licensing, 30 Rockefeller Plaza, New York, N.Y. 10036.

4,128,247. STYLUS POSITION CONTROL SYSTEM.

4,128,784. BEAM GUIDE FOR DISPLAY DEVICE WITH BEAM INJECTION MEANS.

4,128,824. MULTILAYED DEFLECTION YOKE.

4,128,834. RANGE MARK GENERATION.

4,128,868. D-C CONVERTER USING PULSED RESONANT CIRCUIT.

4,129,536. VINYL CHLORIDE BASED INJECTION MOLDING COMPOSITION.

4,129,628. METHOD OF MAKING A THERMOPLASTIC LENS BY VACUUM FORMING.

4,129,744. SOLDER CONNECTION BETWEEN COPPER AND ALUMINUM CONDUCTORS.

4,129,804. IMAGE DISPLAY DEVICE COMMUTATOR.

4,129,806. CORRECTION CIRCUIT FOR LOAD DEPENDENT RASTER DISTORTION.

4,129,826. CIRCUIT TEST APPARATUS.

4,129,840. ARRAY OF DIRECTIONAL FILTERS.

4,129,871. CIRCULARLY POLARIZED ANTENNA USING SLOTTED CYLINDER AND CONDUCTIVE RODS.

4,129,878. MULTI-ELEMENT AVALANCHE PHOTODIODE HAVING REDUCED ELECTRICAL NOISE.

4,130,338. HOLOGRAM HAVING EXPANDED VIEWING AREA.

4,130,347. FINE-LINE DIFFRACTIVE SUBTRACTIVE COLOR FILTERS.

4,130,783. SIDE PINCUSHION CORRECTION CIRCUIT WITH LOW DISSIPATION DAMPING.

4,130,802. UNIDIRECTIONAL PHASE SHIFT KEYED COMMUNICATION SYSTEM.

4,130,886. CIRCUIT FOR REARRANGING WORD BITS.

4,131,021. HIGH RESOLUTION PULSE-ECHO ULTRASONIC-IMAGING DISPLAY SYSTEM.

4,131,022. PULSE-ECHO ULTRASONIC-IMAGING DISPLAY SYSTEM.

4,131,023. PULSE-ECHO ULTRASONIC-IMAGING DISPLAY SYSTEM.

4,131,024. PULSE-ECHO ULTRASONIC-IMAGING DISPLAY SYSTEM.

4,131,025. PULSE-ECHO ULTRASONIC-IMAGING DISPLAY SYSTEM.

4,131,496. METHOD OF MAKING SILICON ON SAPPHIRE FIELD EFFECT TRANSISTORS WITH SPECIFICALLY ALIGNED GATES.

4,131,698. PRETREATMENT OF POLYVINYL CHLORIDE PLASTICS FOR ELECTROLESS DEPOSITION.

4,131,822. CATHODE RAY TUBE WITH STRESS-RELIEVED SLOT-APERTURE SHADOW MASK.

4,131,823. MODULAR FLAT DISPLAY DEVICE WITH BEAM CONVERGENCE.

4,131,827. POWER TRANSFER APPARATUS.

4,131,904. DEGRADATION RESISTANCE OF SEMICONDUCTOR ELECTROLUMINESCENT DEVICES.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

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North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County Public Library	(513) 369-6969
	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
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*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF JANUARY 27, 1979

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	6-2-78
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director. Heterocyclic, Amides: Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	12-16-77
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	5-1-78
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	1-23-78
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	11-28-77
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	11-2-77
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	10-4-77
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—N. ANSHER, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	4-4-78
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	9-5-77
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	6-23-77
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	3-17-77
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—M. M. NEWMAN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	12-22-77
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	2-21-78
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—B. R. GRAY, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	12-12-77
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	1-11-77
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—G. M. FORLENZA, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Textiles; Apparel and Shoes; Sewing Machines; Machine Elements; Clutches.	11-2-77

Expiration of patents: The patents within the range of numbers indicated below expire during January 1979, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 3,015,103 to 3,019,439, inclusive
Plant Patents..... Numbers 2,117 to 2,129, inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED MARCH 6, 1979

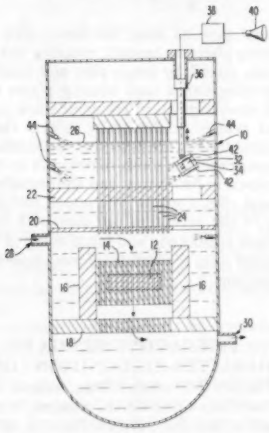
Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent and Trademark Office makes no assertion as to the novelty of the disclosed subject matter.

T980,001
UV VIEWING THROUGH SODIUM COOLANT

Lawrence E. Minnick, Los Altos Hills, and Randall W. Pack, Redwood City, both of Calif., assignors to Electric Power Research Institute, Palo Alto, Calif.

Continuation of Ser. No. 668,160, Mar. 18, 1976, abandoned.
This application Jun. 29, 1977, Ser. No. 811,012
Int. Cl.[2] G21C *17/00*
U.S. Cl. 176—19 R
1 Sheets Drawing. 9 Pages Specification



Sodium-immersed components in a nuclear reactor are rendered observable by illumination with radiation in the ultraviolet (UV) sprectrum and by detecting reflected radiation through a UV scanning means, such as a television type camera sensitive to UV radiation. The UV scanning means may be adapted to be immersed in molten sodium coolant to facilitate observation of selected locations within the nuclear reactor. Real-time images may be provided for monitoring reactor operation and remotely-controlled reactor maintenance operations.

T980,002
PHOSPHATE FLOTATIONS WITH SATURATED BRANCHED-CHAIN FATTY ACID ISOMERS

Shuang-shii Hsieh, and James R. Lehr, both of Florence, Ala., assignors to Tennessee Valley Authority

Filed Nov. 23, 1977, Ser. No. 854,357
Int. Cl.[2] B03D *1/02*
U.S. Cl. 209—166
No Drawing. 15 Pages Specification

Mixtures of the isomers of C_{18} and C_{16} branched-chain saturated fatty acids have been demonstrated to be satisfactory substitutes as flotation reagents in Florida phosphate rock flotation in place of commercial crude, refined, or blended tall oils, or other straight-chain aliphatic fatty acids derived from vegetive sources in which the unsaturated aliphatic fatty acid components are the principal or most effective flotation reagents, as opposed to the corresponding saturated straight-chain fatty acids. The title reagents consisting of saturated branched-chain fatty acids of similar carbon content (C_{16} - C_{18}) can be used alone as acids, or as soap derivatives, or in blended mixtures with fuel oil, which reduces reagent comsumption and also increases the grade and recovery of phosphate concentrate. The selectivity of this new class of fatty-acid collectors has been found to be so superior that acceptable grades of phosphate rock concentrate product can be obtained from low-grade Florida phosphate ore in a single anionic flotation circuit, using flotation feed extending down to 400 mesh, thereby minimizing slime losses of phosphate heretofore wasted.

T980,003
POLYOLEFIN COMPOSITIONS CONTAINING CALCIUM CARBONATE

Derek S. Brackman, Edgware, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Mar. 10, 1978, Ser. No. 885,345
Claims priority, application United Kingdom, Mar. 28, 1977, 12914/77
Int. Cl.[2] C08K *3/26*
U.S. Cl. 260—42.37
No Drawing. 8 Pages Specification

Polyolefin compositions filled with from 10 to 85% by weight of particulate (preferably coccolithic) calcium carbonate have less adversely affected impact strengths if the weight mean particle diameter of the calcium carbonate is from 1.40 to 1.90 μ. The calcium carbonate is preferably coccolithic. The preferred polyolefins are copolymers of propylene with 10 to 20% by weight of ethylene. The composition may also contain from 2 to 15% calculated on the weight of the calcium carbonate, of fiberous vegetable matter.

The filled compositions are useful for conversion into press-formable sheet, for example, having a thickness of 0.5 to 2 mm, which may be melt bonded to a textile cloth and thermoformed into an article such as a piece of motor vehicle trim. The large amounts of filler in the composition allow freshly formed hot sheets to be conveniently laminated to woven or non-woven natural synthetic cloths without the use of adhesives.

T980,004
PHENOLIC DYE-FORMING COUPLERS

Harland J. Osborn, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 774,087, Mar. 3, 1977, Pat. No. 4,124,396.
This application Feb. 1, 1978, Ser. No. 874,164
Int. Cl.[2] C07C *143/75, 143/79*
U.S. Cl. 260—556 A
No Drawing. 28 Pages Specification

2,5-Dicarbonylaminophenols containing a p-alkylsulfonylaminophenoxy terminal moiety or a p-alkylaminosulfonylphenoxy terminal moiety in the five-position substituent of the molecule are color-forming couplers useful in photographic silver halide emulsions and elements.

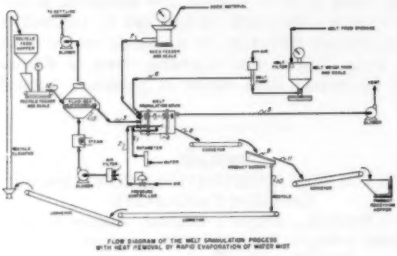
T980,005
GRANULATION AND COATING BY IMPROVED METHOD OF HEAT REMOVAL

Arthur R. Shirley, Jr., Florence, Ala., assignor to Tennessee Valley Authority, Washington, D.C.

Filed Nov. 11, 1977, Ser. No. 850,588
Int. Cl.[2] B01J *2/02*
U.S. Cl. 264—7
2 Sheets Drawing. 31 Pages Specification

An improved process for the granulation or coating of hygroscopic or nonhygroscopic materials where melt is sprayed onto

cascading granules of common or uncommon substrate in an enclosed vessel such as a rotary drum preferably with lifting flights which provide maximum mixing of the granules and the atmosphere enclosed in the unit and where heat given off by solidification of the melt is absorbed by evaporation of water which is atomized as an extremely fine mist into areas of the vessel which are not subtended by falling granules. Evaporation is effected without impingement of the mist on the granules or vessel internals. Air for evaporation is pulled through



FLOW DIAGRAM OF THE MELT GRANULATION PROCESS WITH HEAT REMOVAL BY RAPID EVAPORATION OF WATER MIST

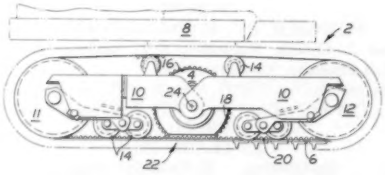
the vessel concurrent with the flow of granules and its moisture content is regulated below the critical humidity of the granules throughout the vessel. Some recycle of undersize granules discharged from the vessel is maintained for size control; however, examples show the recycle rate decreased by 87 percent over recycle cooled processes as 73 percent of the heat evolved is removed by evaporation of water mist. An equation is developed which mathematically represents the thermodynamics of the process and specific values are presented for variables when granulating sulfur or urea.

T980,006

TIRE AND CONTINUOUS TRACK SYSTEM

Richard E. Livesay, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 24, 1978, Ser. No. 899,210
Int. Cl.[2] B62D *55/12*
U.S. Cl. 305—34
1 Sheets Drawing. 4 Pages Specification



A track assembly has a continuous track and a tire is provided in contact with the track. A plurality of protrusions extends from one of the track and tire, and openings extend into the other of the track and tire. These protrusions and openings are mateable one within the other. The mating elements can be a multiplicity of configurations.

Rotation of the tire by a power source progressively engages protrusions and openings, and the track is driven, as might be employed as drive mechanism for a track-type vehicle. The tire, for example, can be a pneumatic tire, preferably a tire of the beadless type.

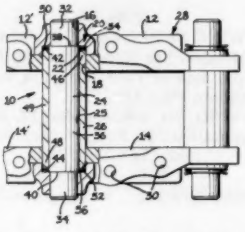
The flexible properties of the tire eliminates the need for a fixed distance between the track and drive axle and increases the contact area between the tire and track driving elements. Further, noise is reduced in the track system and the tire can provide an air suspension for the vehicle.

T980,007

TRACK PIN WITH RETAINING STEPPED ENDS

Delmar R. Lammers, Dunlap, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Jul. 17, 1978, Ser. No. 925,501
Int. Cl.[2] B62D *55/20*
U.S. Cl. 305—58 R
1 Sheets Drawing. 6 Pages Specification



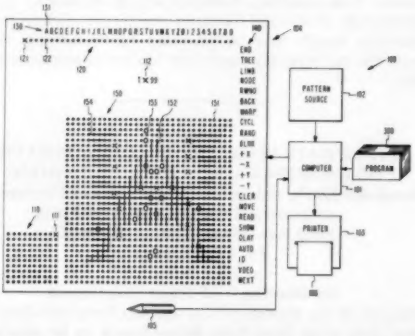
Endless chains such as used for heavy-duty conveyors or crawler tractors often use spaced, coacting links with laterally overlying ends joined by hinge pins and bushings to couple segments carrying either load bearing plates or track shoes. Severe work environments often include fine particles of abrasive material which detrimentally affects the hinge joints. Therefore, suitable seals are provided to exclude such material. Without proper care, the joints deteriorate to the point where pins wear, loosen in link bores, and shift axially sufficiently to reduce the seal effectiveness. The sealed and lubricated chain hinge joints of the invention use pins with stepped ends to assure optimum positioning and functioning of the seals and to maintain against joint separation by inadvertent axial displacement of hinge pins.

1980,008

INTERACTIVE DESIGN OF CHARACTER-RECOGNITION LOGICS

William C. Naylor, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 309,578, Nov. 24, 1972, which is a continuation of Ser. No. 78,712, Oct. 7, 1970. This application Jul. 19, 1976, Ser. No. 706,973
Int. Cl.[2] G06K *9/12*
U.S. Cl. 340—146.3 AQ
7 Sheets Drawing. 44 Pages Specification



A stored-program computer reads a sequence of input patterns and outputs a decision-tree logic for recognizing those patterns. A terminal is coupled to the computer for producing a graphic display of the pattern portions or locations, a list of pattern-class names and a menu of operations. The display also presents a running representation of the recognition logics. A light pen selects locations of an input pattern for addition to the logic, identifies the input pattern and selects various ones of the menu operations. Auxiliary operations in the menu are available for modifying the sequence of input patterns, applying linear transformations to the patterns, the display of selected patterns on the terminal, and various housekeeping functions.

REISSUES

MARCH 6, 1979

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 29,923

SOUND-PROOFED INTERNAL COMBUSTION ENGINE

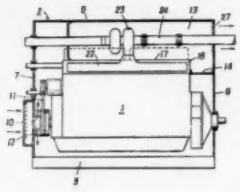
Gerhard Thien, and Heinz Fachbach, both of Graz, Austria, assignors to Hans List, Graz, Austria

Original No. 3,964,462, dated Jun. 22, 1976, Ser. No. 531,445, Dec. 10, 1974. Application for reissue Jan. 17, 1978, Ser. No. 870,139

Claims priority, application Austria, May 20, 1974, 4184/74

Int. Cl.[2] F02B *77/00;* F01P *1/02*

U.S. Cl. 123—198 E **3 Claims**



1. An internal combustion engine having a soundproofing casing therearound and defining a chamber therebetween through which air is circulated from a blower mounted adjacent to an inlet opening in a first front wall of the casing to remove generated heat from the engine, the improvement in which comprises

at least one partition wall dividing the chamber into two separate cooling air ducts which are sealed from each other,

a first one of the cooling air ducts containing all fuel carrying parts of the engine including a fuel injection pump, fuel pressure pipes and fuel injection nozzles,

the second one of the cooling air ducts containing at least the major portions of those components of the engine exhaust system which are located within the soundproofing casing including an exhaust manifold and an exhaust tube, and the soundproofing casing having two separated cooling air outlet ports therein each of which is connected to a separate one of the two cooling air ducts whereby any combustible materials carried by the cooling air from the fuel carrying parts of the engine are prevented from encountering hot exhaust system surfaces thereby significantly reducing any danger of fire.

Re. 29,924

THERMALLY INSULATING WALL UNITS

Otto A. Becker, Robert Koch Strasse 59, 66 Saarbruecken 6, Fed. Rep. of Germany

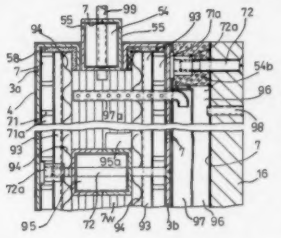
Original No. 3,929,186, dated Dec. 30, 1975, Ser. No. 444,003, Feb. 20, 1974. Continuation of Ser. No. 37,068, May 13, 1970, abandoned. Application for reissue Oct. 17, 1977, Ser. No. 843,080

Claims priority, application Fed. Rep. of Germany, May 13, 1969, 1924313; May 21, 1969, 1925789; Jun. 25, 1969, 1932202; Jul. 22, 1969, 1937086; Aug. 14, 1969, 1941401; Aug. 23, 1969, 1943042

Int. Cl.[2] F24H *9/08*

U.S. Cl. 165—49 **12 Claims**

1. An assembly of wall units for providing thermal and acoustic insulation, each of said wall units comprising at least one outer panel and one inner panel connected to the outer panel, said panels forming a cavity therebetween, the cavity being air-tightly closed, shaped insulating and spacing means disposed in the cavity, said insulating and spacing means being formed of relatively stiff material so as to transversely rigidify the wall unit between said outer and inner panels, means for circulating a dry gas through said wall units, said means comprising a gas supply line communicating with each of said cavities, said supply lines being connected to a common supply line for supplying gas to all of said cavities, a gas take-off line



in each cavity spaced from said supply line, said take-off lines being connected to a common take-off line for removing gas simultaneously from said cavities, a volume compensating device for controlling the volume of gas in said wall units, and pump means for recirculating the gas from said take-off lines to said supply lines.

Re. 29,925

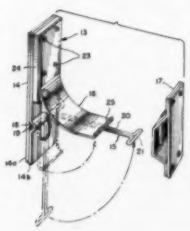
VEHICLE DOOR LATCH

Daniel A. McGillivray, 10 Woodchuck Ridge Rd., Rte. 5, Lexington, Va. 24450

Original No. 3,934,907, dated Jan. 27, 1976, Ser. No. 500,159, Aug. 23, 1974. Application for reissue Jan. 23, 1978, Ser. No. 871,425

Int. Cl.[2] E05C *19/06*

U.S. Cl. 292—121 **6 Claims**



1. A latch assembly including a mounting plate adapted to be affixed to a vertical surface, a normally vertical latch bar having an upper end pivotally attached to the plate for outward swinging movement of the bar in a vertical plane normal to the plate, the bar having an opposite free end adapted to be detachably received in the recess of a keeper, wherein the improvement comprises

a vertically-elongated spring arm [having an upper end secured to said plate above the pivotal attachment of said bar to said plate] *supported upon said plate* and having a lower end slidably engagable with said bar for yieldably resisting lifting movement of the bar's free end and for retaining said free end within the recess of said keeper, said spring arm being substantially wider than the portion of said bar in slidable engagement therewith and having its free end curved away from said bar, said spring arm in an

untensioned state having its lower end spaced outwardly from said bar in the direction of pivotal movement of said bar, whereby, said bar may be grasped and swung outwardly a limited distance of free movement before slidably engaging said spring arm.

Re. 29,926

2-DECARBOXY-2-HYDROXY-METHYL-16-FLUORO-PGE$_1$ COMPOUNDS

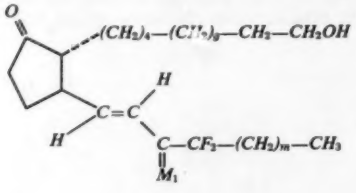
Norman A. Nelson, Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Original No. 4,032,576, dated Jun. 28, 1977, Ser. No. 647,369, Jan. 8, 1976. Application for reissue Aug. 10, 1977, Ser. No. 823,316

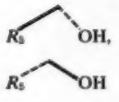
Int. Cl.[2] **C07C** *49/46, 49/80, 49/82, 177/00*

U.S. Cl. 260—586 R **2 Claims**

16. A prostaglandin analog of the formula



wherein M_1 is



wherein R_5 is hydrogen or methyl; wherein g is one, 2, or 3; and wherein m is one to 5, inclusive.

Re. 29,927

SHUTTER OPERATING CIRCUITS FOR PHOTOGRAPHIC CAMERAS

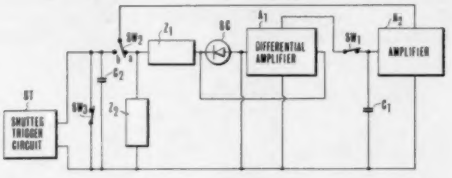
Osamu Ichihashi, Machida, Japan, assignor to Yashica Co., Ltd., Japan

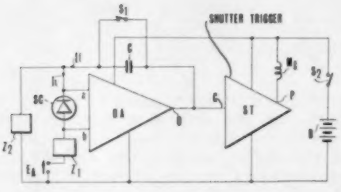
Original No. 3,855,603, dated Dec. 17, 1974, Ser. No. 415,316, Nov. 13, 1973. Application for reissue Sep. 2, 1976, Ser. No. 719,894

Claims priority, application Japan, Nov. 16, 1972, 47-115154; Apr. 13, 1973, 48-41895

Int. Cl.[2] **G03B** *7/08;* **G01J** *1/46*

U.S. Cl. 354—51 **9 Claims**





1. A shutter operating circuit for a photographic camera, comprising a photoelectric transducer disposed to receive [the] light [transmitting] *transmitted* through the objective lens of said camera, first amplifier means for amplifying the output from said photoelectric transducer, second amplifier means having a high input impedance and operating to generate an output corresponding to the output from said first amplifier means, means for feeding back the output from said second amplifier means to the input of said first amplifier means, a capacitor connected on the input side of said second amplifier means for holding the output from said second amplifier means in accordance with the opening operation of the shutter of said camera, a first impedance element connected in series with said photoelectric transducer, a second impedance element connected in parallel with said series combination of said first impedance element and said photoelectric transducer, an integrating capacitor for integrating the output from said second amplifier means in accordance with the opening operation of said shutter, and a shutter trigger circuit for closing said shutter [when] *upon* the voltage across said integrating capacitor [reaches] *reaching* a predetermined value whereby the exposure time is determined by the output current from said second amplifier means [which] *and* is proportional to the output from said photoelectric transducer and varied by utilizing the impedances of said first and second impedance elements as parameters.

PLANT PATENTS

GRANTED MARCH 6, 1979

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,390
KALANCHOE PLANT

Lawrence T. Irwin, Canyon, Tex., assignor to J & L Plants, Inc., Canyon, Tex.

Filed Oct. 14, 1977, Ser. No. 842,232
Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct variety of kalanchoe plant, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a very different deep reddish orange flower with a distinctive light yellowish pink eye, highly branched sturdy and upright plant habit, producing a consistent plant height ranging between about 12 and 15 inches with medium size foliage of attractive moss green to fern green color, profuse blooming habit, with substantially uniform blooming date capable of responding to short day treatment for year around blooming, ability to initiate and develop flower buds under high night temperatures of summer.

4,391
ROSE PLANT–DELADEL

Georges A. Delbard, Paris, France, assignor to Jackson & Perkins Co., Medford, Oreg.

Filed Dec. 12, 1977, Ser. No. 859,996

U.S. Cl. Plt.—20 **1 Claim**

1. A new and distinct cultivar of rose of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its vigorous, heavily branched plant, a similarity to the cultivar Super Star (Tropicana, U.S. Plant Pat. No. 1,969) of its stems, thorns and foliage, a pronounced resistance to Rose Powdery Mildew, a brown corky surface of irregularly shaped areas on older stems, a very uniform bud and flower color very near to Wilson's Blood Red, and a very slight flower fragrance.

4,392
MAPLE TREE

J. Frank Schmidt, III, 14131 SE. 312th Ave., Boring, Oreg. 97009

Filed Dec. 20, 1977, Ser. No. 862,762
Int. Cl.[2] A01H *5/12*

U.S. Cl. Plt.—51 **1 Claim**

1. A new and distinct variety of maple tree substantially as herein shown and described, characterized particularly as to novelty by its upright branches and rapid initial rate of growth.

4,393
CHRYSANTHEMUM PLANT NAMED CRIMSON ANNE

Edward A. Smith, Walberton, and Keith D. Butters, Littlehampton, both of England, assignors to Pan American Plant Company, West Chicago, Ill.

Filed Apr. 24, 1978, Ser. No. 899,726
Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—82 **1 Claim**

1. A new and distinctive chrysanthemum cultivar, substantially as herein shown and described, distinguished particularly by the deep red coloration of its blooms as compared with its parent variety Red Anne.

PATENTS

GRANTED MAR 6, 1979

ERRATA

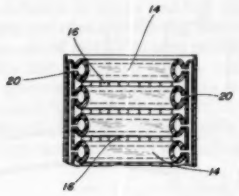
For CLASS	See PATENT NO.
405–119	4,142,370
405–224	4,142,371
414–753	4,142,631
414–139	4,142,640
414–541	4,142,641
414–719	4,142,642
414–416	4,142,643
414–431	4,142,644
235–092 TA	4,142,680
137–557	4,142,860
221–198	4,142,861
221–279	4,142,862
422–063	4,142,863
422–179	4,142,864
260–045.85 T	4,142,904
528–123	4,143,000
521–137	4,143,002
521–129	4,143,003
521–174	4,143,004
546–089	4,143,042
562–513	4,143,066
568–636	4,143,077
023–230 B	4,143,080
424–246	4,143,166

PATENTS

GRANTED MARCH 6, 1979

GENERAL AND MECHANICAL

4,142,252
ATHLETIC PROTECTIVE PAD DEVICE
John Storer, 3070 Mayfield Rd., Cleveland Heights, Ohio 44118
Filed Sep. 29, 1977, Ser. No. 837,845
Int. Cl.[2] A41D *13/06*
U.S. Cl. 2—24 **3 Claims**

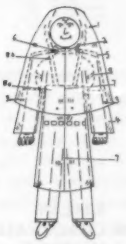


1. A pneumatic splint-like device of the type to be applied circumferentially around a portion of the body, such as the knee-joint, to provide support and protection and so as not to impede arterial or venous circulation therefor comprising,
inner and outer sections made from a resilient fabric material,
said inner section comprising a plurality of pneumatically inter-connected generally circular hollow tubes,
said outer section comprising a plurality of pneumatically inter-connected longitudinal hollow tubes extending generally at right angles to said inner tubes,
said inner circular and outer longitudinal tubes are pneumatically inter-connected by a plurality of apertures so as to be substantially simultaneously inflated to the same approximate pressure, and
said outer longitudinal tubes having greater flexion characteristics than said inner circular tubes whereby said inner circular tubes act as air reservoirs so as to return excess pressure to said outer longitudinal bundles upon extension of said knee-joint.

4,142,253
MULTI-FUNCTION AND MULTI-STYLE GARMENT AND METHOD OF MAKING THE SAME
Lee S. Roscoe, 254 E. 68th St., New York, N.Y. 10021
Filed Sep. 15, 1977, Ser. No. 833,697
Int. Cl.[2] A41D *1/22*
U.S. Cl. 2—74 **23 Claims**

1. A garment comprising a generally tubular structure having in the upper section thereof at least two integral tie sections, the locus of the profiles of said sections being of generally triangular configuration and the length of said tie sections being greater than the radius of said tubular structure, whereby said garment is adapted to multiple functions and styles and modular coordination with accessories.

4,142,254
FULLY VENTILATED STORM SUIT
Forest D. Arnold, 7315 Allan Ave., Falls Church, Va. 22046
Filed Oct. 1, 1976, Ser. No. 728,617
Int. Cl.[2] A41D *9/00*
U.S. Cl. 2—84 **7 Claims**

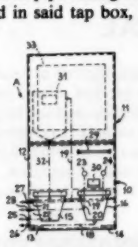


1. A fully ventilated storm suit of waterproof material comprised of four components to be used in combination:
(a) a cape with a face opening overlapping a lower body covering and sleeves, adapted to cover the head, shoulders, upper trunk and upper arms of the wearer,
(b) a sleeve arrangement having a lower portion of waterproof material constructed with an inward seam covering that part of the arms not covered by the cape and hood and attached to an upper portion made of non waterproof material suspended from an attachment at the neck providing a detachable sleeve that may be left hanging from the wearers neck when not needed for lower arm protection,
(c) a waterproof covering suspended from the shoulders of the wearer adapted to cover the lower trunk, body and upper legs of the wearer,
(d) a closure system comprised of temporary fasteners for attaching together the free edges of said cape and hood and said body covering.

4,142,255
PREFABRICATED HYGIENIC-SANITARY COMPONENTS FOR BATH-ROOM AND TOILET OUTFIT
Giulio Togni, Lainate, Italy, assignor to Salvarani S.p.A, Baganzola, Italy
Continuation of Ser. No. 670,950, Mar. 26, 1976, abandoned.
This application Dec. 27, 1977, Ser. No. 864,873
Claims priority, application Italy, Mar. 28, 1975, 21848 A/75
Int. Cl.[2] A47K *4/00;* **E03C** *1/01;* **E03D** *11/13*
U.S. Cl. 4—1 **2 Claims**

1. A prefabricated hygienic-sanitary bath-room and toilet outfit, comprising a self-supporting water closet and a bath-tub each piece in the form of a furniture piece including flow regulating means, each completely finished with panels, each of said water closet and bathtub furniture pieces having pipe fittings mounted thereon, flexible feed and flexible discharge pipes for each of said water closet and bath-tub secured to said bath-tub and water closet pipe fittings, a tap box mounted in

the bathroom said flexible pipes being connected to respective pipe fittings assembled in said tap box, means for concealing



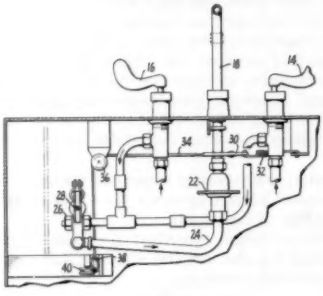
the flexible pipes and the top box, and each of said water closet and bath-tub being movable without being disconnected from said tap box.

4,142,256

SAFETY SPOUT FOR COMBINATION TOILET AND LAVATORY

J. Les Campbell, Burlingame, Calif., assignor to Aluminum Plumbing Fixture Corp., Burlingame, Calif.

Filed Jun. 16, 1978, Ser. No. 916,103
Int. Cl.[2] E03D *11/03, 11/13*
U.S. Cl. 4—3 **2 Claims**



1. A combination toilet fixture including a wash bowl and a toilet comprising in combination:

a. a frame member having a toilet bowl mounted thereon;

b. a washbasin having a support hingedly mounted on said frame member whereby the washbasin can be swung horizontally to a first position directly over the toilet bowl and to a second position away from said toilet bowl;

c. a spout having a terminal end, said spout being rotatably mounted on said frame member, said spout being rotatable from a first position wherein said terminal end of the spout extends over the washbasin and to a second position wherein the terminal end of said spout extends over said frame member and

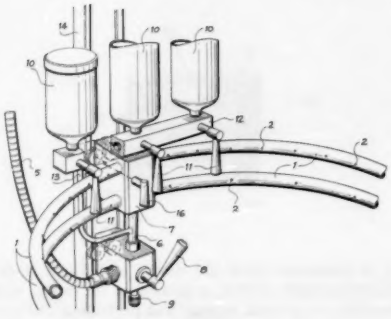
d. a linkage between said washbasin support and said pivoted spout whereby said spout is moved from the first position when the washbasin is in the first position and to said second position when the washbasin is in said second position.

4,142,257

BODY SHOWER

Allen R. Mace, Flat 1608, 55 Morehead St., Redfern, Sydney, Australia (2016), assignor to Allen Ronald Mace and Isabelle Catholine Mace, both of Redfern, Australia

Filed Jun. 22, 1977, Ser. No. 808,816
Claims priority, application Australia, Jun. 24, 1976, PC6406
Int. Cl.[2] A47K *3/22*
U.S. Cl. 4—152 **6 Claims**



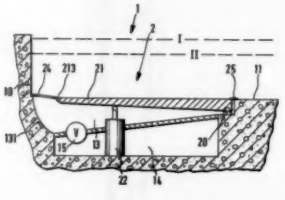
1. A shower assembly adapted for slidable movement along a wall surface, said shower assembly comprising a tubular shower member encircling a showering zone and including water inlet means adapted to be connected to a water supply and water outlet means comprising a plurality of spaced apart holes located at intervals in the wall of said tubular shower member and directed into said showering zone so that, in operation, water entering said inlet means passes through said tubular shower member and out of said holes into said showering zone, and means for slidably mounting said tubular shower member on the wall surface whereby said member may be raised and lowered in a vertical direction and wherein said mounting means includes a pair of longitudinal rail members adapted to be fixedly attached to said wall surface and a plurality of wheels rotatably mounted on said shower assembly and disposed for operative engagement with said rail members.

4,142,258

SWIMMING POOL WITH WAVE GENERATING INSTALLATION

Klaus Schiron, Nelkenstrasse 2, 3100 Celle, and Hans F. Ruprath, Am goldenen Acker 35, 3001 Bennigsen, Fed. Rep. of Germany

Filed Aug. 27, 1976, Ser. No. 718,163
Claims priority, application Fed. Rep. of Germany, Aug. 28, 1975, 2538302
Int. Cl.[2] E04H *3/18;* A47K *3/10*
U.S. Cl. 4—172.16 **15 Claims**



6. A swimming pool having generally vertical side walls and a generally horizontal bottom, in combination with an installation for mechanically generating waves, comprising:

a flap having opposed sides and opposed ends, said flap being pivotally mounted about a generally horizontal axis

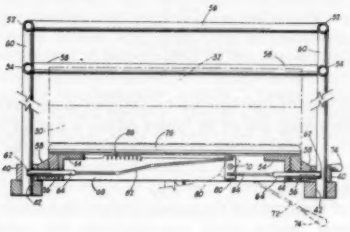
along one end, said flap forming a part of the bottom of the swimming pool, and said flap extending substantially entirely between two opposed generally vertical side walls of the swimming pool with said flap opposed side walls being closely adjacent said swimming pool opposed generally vertically side walls; power means for cyclically pivoting said flap up and down about its axis to generate waves; means between the end of said flap opposite from said axis and the adjacent generally vertical one end wall of the swimming pool, forming a flow passage in said bottom providing free water flow from above to below and from below to above said flap along substantially the entire one end of said swimming pool to generate waves at said one end of said swimming pool as said power means oscillates said flap about its axis; and automatic control means operating said power means to continuously cycle and regulate said power means for continuous up and down pivoting of said flap to correspondingly produce a continuous series of waves emanating from said one side wall.

4,142,259

INVALID BATHING ASSEMBLY

Helen B. Moore, Rte. 2, Elmore City, Okla. 73035

Filed Feb. 6, 1978, Ser. No. 875,131
Int. Cl.[2] A47K *3/06, 3/062*
U.S. Cl. 4—177 R **18 Claims**



1. An invalid bathing assembly comprising:
an adjustable bed frame including a pair of opposed, substantially parallel side portions and a horizontally extending bottom portion;
a mattress supported on the bottom portion between the side portions of the frame;
a water deflecting flexible sheet detachably connected to the opposed side portions of the frame and covering the mattress for retaining water for bathing an individual in said assembly;
means for selectively elevating and lowering the side portions of the frame relative to said bottom portion; and
means for elevating and lowering the entire bed frame.

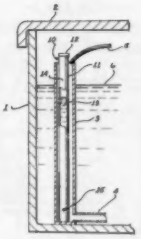
4,142,260

CHEMICAL DISPENSER FOR FLUSH TYPE WATER TANK TOILETS

Ralph E. Snyder, Box 193, Black Canyon Stage, Phoenix, Ariz. 85020

Filed Sep. 5, 1974, Ser. No. 503,298
Int. Cl.[2] E03D *9/03*
U.S. Cl. 4—223 **29 Claims**

1. A dispenser mountable within the standpipe of water tank type toilets for dispensing cleaning and disinfectant fluid chemical compounds into the toilet bowl during each flush cycle of the toilet and preventing intermixing of the chemical compound with the body of water contained within the water tank, said dispenser comprising:
a. an elongated tube for housing the chemical compound, which chemical compound is periodically incrementally dispensed into the toilet, said tube being positionable within the standpipe in general alignment with the longitudinal axis thereof, and including:
(1) a closed upper end for establishing a head space adjacent the upper level of the housed chemical compound; and
(2) a lower end for dispensing the chemical compound into the water within the standpipe during each flush cycle; and



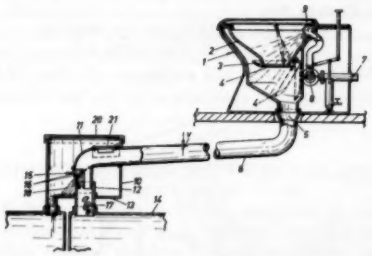
b. means disposed within said lower end for discharging a quantity of the chemical compound in response to a flow of water through the standpipe and proximate said lower end; whereby, a quantity of the chemical compound is discharged from said dispenser and into the toilet bowl during each flush cycle of the toilet without coming into contact with the walls of the water tank.

4,142,261

ARRANGEMENT IN SANITARY CLOSET SYSTEMS

Ole B. Johansen, Asmundtorp 147, 430 61 Harryda, Sweden

Filed Apr. 11, 1977, Ser. No. 786,187
Claims priority, application Sweden, Apr. 27, 1976, 7604803; Jul. 16, 1976, 7608125
Int. Cl.[2] E03D *5/014, 11/10*
U.S. Cl. 4—300 **6 Claims**



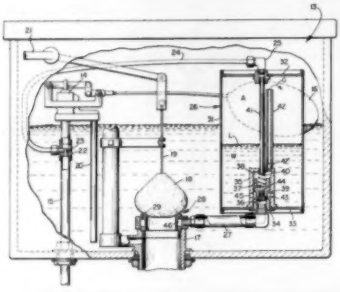
1. In an improved sanitary closet comprising a seat, a flushing basin positioned below the seat, a soil pipe, a flushing container and a sludge tank, said soil pipe having a sloping portion down to said flushing container and passing through said flushing container and interconnecting said flushing basin and said sludge tank, the improvement comprising a bend in said soil pipe located inside said flushing container and between said sloping portion and said sludge tank, the portion of the soil pipe downstream of the bend extending downwardly in a vertical direction, and a grid means located on the downstream portion of said bend with said grid means being located in a side wall of the downwardly extending portion of said soil pipe and adjacent to the bottom of the sloping portion of said soil pipe in opposition to flow of flushing liquid and urine, whereby flushing liquid and urine passes through said grid means to said flushing container and faeces and toilet paper passes through said soil pipe to said sludge tank.

4,142,262

FLUSH TOILET SYSTEM

William H. Hamilton, 16769 32nd Ave., SW., Seattle, Wash. 98166

Filed Jul. 1, 1977, Ser. No. 812,066
Int. Cl.[2] E03D 3/10, 1/22
U.S. Cl. 4—354 19 Claims



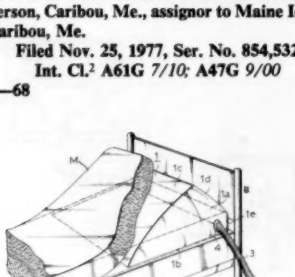
1. In a flush toilet system having a bowl, a reservoir tank wherein water may be stored in a primary body at a predetermined level to establish a predetermined pressure head and means for selectively releasing water from said tank into the bowl during flushing, the provision of means within said reservoir tank operative when water is released from said reservoir tank for automatically discharging a predetermined quantity of water from a source wherein water is contained at a pressure higher than the pressure of the water in the reservoir tank into water being released from said tank into said bowl at sufficiently high velocity to materially increase the overall energy of the water in the bowl and effect increased efficiency during flushing.

4,142,263

BED-MATTRESS ELEVATING SYSTEM AND THE LIKE

Olof P. Pierson, Caribou, Me., assignor to Maine Ideas Incorporated, Caribou, Me.

Filed Nov. 25, 1977, Ser. No. 854,532
Int. Cl.[2] A61G 7/10; A47G 9/00
U.S. Cl. 5—68 5 Claims



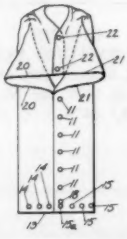
1. In a bed-mattress elevating system and the like, an inflatable pillow of flexible material having, when inflated, a prismatic configuration provided with four-sided end wall panels and comprising four successively connected rectangular wall panels bounding the pillow between the end wall panels, the rectangular wall panel forming the bottom of the pillow being connected along its forward edge to a front rectangular wall panel extending rearwardly upwardly at an acute angle and the top edge of which connects to an upper rearward rectangular wall panel sloping downwardly almost substantially normally to the said front wall panel and then connecting with a lower rearward rectangular wall panel extending substantially vertically downward to meet the rear edge of the said bottom wall panel substantially normally, the pillow being adapted for insertion, in deflated condition, with the bottom and front rectangular wall panels placed between the bottom of the mattress and the mattress support and the upper rearward wall panel near the headboard region of the bed in order, upon inflation of the pillow, to raise the part of the mattress near the headboard, and means for enabling inflation and deflation of the inserted pillow.

4,142,264

CONVERTIBLE COMFORT OR GARMENT

Richard T. Whiting, Cincinnati, Ohio, assignor to Whiting Manufacturing Company, Inc., Cincinnati, Ohio

Filed Mar. 31, 1978, Ser. No. 892,214
Int. Cl.[2] A47G 9/00, 9/06
U.S. Cl. 5—334 R 1 Claim



1. A comforter of conventional rectangular shape having on its under side along one of its longer edges, a row of female fastener elements and having on its upper side, along the opposite longer edge, a like row of male fastening elements, said rows of fastening elements extending between about 52% and about 67% of the length of the comforter from its bottom edge, said comforter having along approximately the outer half portions of its bottom edge on its under side, a number of female fastening elements, and having along approximately the inner half portions of its bottom edge on its upper side a like member of male fastening elements, whereby the comforter may be disposed with its under side up and the longer edges folded in toward the center and secured together by means of said two first mentioned rows of fastening elements, and the lapped bottom edges may be secured together by means of said two last mentioned sets of fastening elements to form a bag-like structure with the print side out, said comforter further including at least two female fastening elements disposed on the under side along one side of the top edge of the comforter and a like member of male fastening elements disposed on the upper side at the other side of the top edge of the comforter, the innermost ones of said last mentioned male and female fastening elements being spaced apart from about 42% to about 72% of the width of the comforter, whereby the last named sets of fastening elements may be secured together with the upper corners of said comforter folded downwardly to cover the shoulders while leaving the head and hands of a user exposed.

4,142,265

PLASTICS BOAT HULL

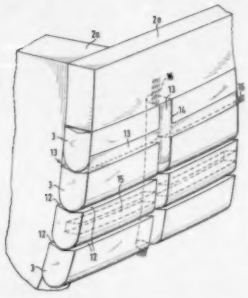
Albert Pfleger, Wachterstrasse 19, D-8170 Bad Tolz, Fed. Rep. of Germany

Filed Jun. 9, 1977, Ser. No. 805,170
Claims priority, application Fed. Rep. of Germany, Jun. 14, 1976, 2626537
Int. Cl.[2] B63B 3/00
U.S. Cl. 9—6 P 28 Claims

1. Self-supporting plastic shell structure, in particular a multilayered boat hull shell, formed of elongate thermoplastic

shapes placed in contact one against another to form a basic shell and covered with laminates of fiber-reinforced hardenable plastics material, comprised by the improvement wherein:

the shapes forming the basic shell are flexible and of uniform cross section and form outwardly opening longitudinal grooves therebetween along their areas of mutual contact, the contacting top and bottom ends of the cross sections of adjacent shapes being configured to rest one within the other but being noncomplementary in in configuration and free of snap-fit relation, a said shape having spaced opposed sidewalls, a said top end which is a shallow V-



cross section top wall connecting said sidewalls and forming a channel, and a said bottom end which is a convexly rounded bottom wall connecting said sidewalls, the convexly rounded bottom wall of one shape contacting the V-cross section top wall of the next shape and being engageable simultaneously with both ramps of said shallow V-cross section top wall through a range of angles corresponding to the angle between said ramps of said shallow V-cross section top wall;

a thermosetting or hardenable filler material filling said longitudinal grooves, said laminate covering side surfaces of said shapes and intervening filler material.

4,142,266

METHOD FOR CREATING OVERLOAD PROTECTION AGAINST YIELDING IN BOLTS

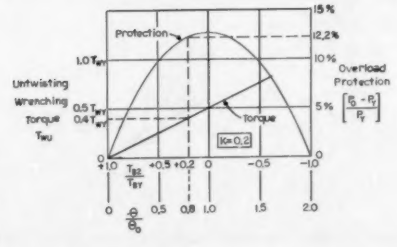
Norman C. Dahl, 40 Fern St., Lexington, Mass. 02173

Continuation-in-part of Ser. No. 693,546, Jun. 7, 1976, Pat. No. 4,037,282. This application Jul. 18, 1977, Ser. No. 816,265

The portion of the term of this patent subsequent to Jul. 26, 1994, has been disclaimed.

Int. Cl.² F16B *31/02*

U.S. Cl. 10—27 R **5 Claims**



1. In a method for creating built-in overload protection against further yielding in a threaded bolt which previously has been tightened to its yield point, which method comprises rotating the bolt head or nut in the direction opposite from tightening through an angle θ such that the reduction in twist of the bolt shank causes the torque acting in said shank to reduce to fifty percent or less of the value existing at the end of tightening and where said angle of rotation θ is not large enough to cause decrease in the tension existing in said bolt at the end of tightening, wherein the improvement comprises measuring the wrenching torque T_{WU} required to rotate said bolt head or said nut and stopping said rotation when the magnitude of said wrenching torque T_{WU} indicates that said torque acting in said shank is fifty percent or less of the value existing at the end of tightening.

4,142,267

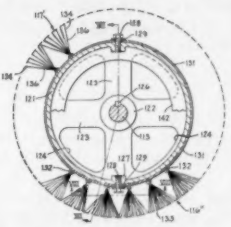
BRUSH FRAME AND SHELL

Gaylord J. Clark, P.O. Box 71C, Coloma, Mich. 49038

Division of Ser. No. 440,284, Feb. 7, 1974, Pat. No. 3,942,210. This application Jan. 19, 1976, Ser. No. 650,533

Int. Cl.² A46B *7/10, 13/04*

U.S. Cl. 15—179 **12 Claims**



1. An improved rotary brush construction having a rotatable hub unit and a plurality of arcuate bristle-carrying brush sections adapted to be detachably mounted on said hub unit circumferentially thereof, and connecting means for removably mounting said brush sections on said hub unit, comprising the improvement wherein each of said brush sections includes an arcuate substantially semi-cylindrical shell having a plurality of bristles mounted thereon and projecting radially outwardly thereof, said shell when in a relaxed and unstressed condition having an internal diameter slightly less than the maximum external diameter of said hub unit, whereby mounting of said brush section on said hub unit causes said shell to be elastically deformed to enable the inner periphery of said shell to conform to the maximum external diameter of said hub unit, said connecting means fixedly maintaining said shell on said hub unit so as to maintain said shell in an elastically deformed condition.

4,142,268

ATTACHMENT OF WINDSCREEN WIPER BLADES TO WIPER ARMS

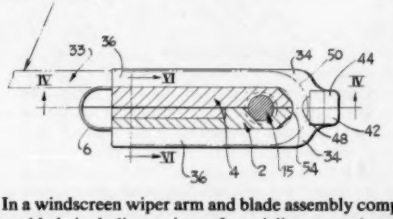
Edward G. Brown, Sunbury-on-Thames; Eric J. Turner, London, both of England; Philip G. K. Smithers, deceased, late of Hounslow, England, and John J. Juviller, executor, London, England, assignors to Trico Products Corporation, Buffalo, N.Y.

Filed Apr. 18, 1978, Ser. No. 897,505

Claims priority, application United Kingdom, Apr. 21, 1977, 16579/77

Int. Cl.² B60S *1/40*

U.S. Cl. 15—250.32 **5 Claims**



1. In a windscreen wiper arm and blade assembly comprising a wiper blade including a circumferentially grooved mounting

pin extending from a side of the blade, defining a shoulder near the ends of said pin, a wiper arm formed of a bar and comprising in succession a straight main part, a part curved into a semi-circular shape and a short straight terminal part, parallel to and spaced from a lower face of the main part; the improvement comprising an adaptor for securing the arm to the blade, the adaptor comprising a pair of components which when in operative position lie in juxtaposed face to face relationship forming a body having an external shape corresponding to and receivable within the U-shaped space defined by said parts of said arm, each component having a transverse cylindrical recess positioned on its face adjacent the other of said components and aligned to form a transverse pin receiving bore, at least one of said recesses including internal means for engaging the groove in said pin, at least one of said components including means to engage the sides of the arm and to limit lateral movement thereof, and at least one of said components having resilient detent means for engaging a portion of said arm to limit longitudinal movement thereof.

4,142,269
CLEANING DEVICE

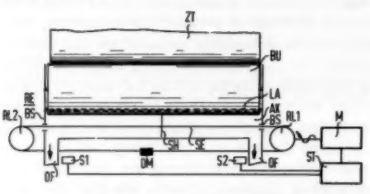
Rudolf Seeberger, Lochham, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Nov. 2, 1977, Ser. No. 847,845

Claims priority, application Fed. Rep. of Germany, Feb. 16, 1977, 2706599

Int. Cl.² G03G *21/00*

U.S. Cl. 15—256.52 **20 Claims**



1. A cleaning device for removing toner residue from an intermediate carrier in an electrostatic copier which comprises a rotary bristled brush contacting the intermediate carrier and effective to remove toner residues therefrom, a shroud surrounding the brush extending the length of the brush, the shroud having a sub-chamber area positioned with respect to the brush such that toner residue whirled away from the brush is directed to the sub-chamber area, the sub-chamber area having at least one suction orifice open thereto having a dimension substantially less than the sub-chamber area, a suction device connected to the orifice whereby a locally intensified airflow is provided at the orifice opening to the suction chamber, toner withdrawl means received within said sub-chamber, the toner withdrawl means oscillating within the sub-chamber.

4,142,270
WET-DRY VACUUM CLEANER BAFFLE STRAINER SYSTEM

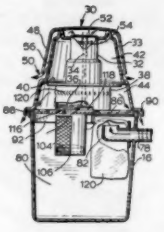
Jelle G. Nauta, R.R. #4, Stouffville, Ontario, Canada

Filed Mar. 4, 1977, Ser. No. 774,316

Int. Cl.² A47L *7/00*

U.S. Cl. 15—353 **3 Claims**

1. A vacuum cleaner for vacuum cleaning wet or damp surfaces comprising a containment vessel for receiving soil material being removed from a surface undergoing cleaning, a motor-air pump assembly being housed in a housing, the lower surface of which forms a lid for said containment vessel, said lower surface having an exit aperture in communication with said air pump for passage of air from said containment vessel into said air pump and said housing, said containment vessel having an inlet aperture in a sidewall near the top thereof, to permit the ingress of air and soil material into said containment vessel, said inlet aperture being fitted with an elbow member to deflect the wet air soil mixture upwardly through an orifice against said lid, said orifice being located a predetermined distance below said lid, said exit aperture being surrounded by a cylindrical cage extending downwardly from and mounted integrally with said lid, said elbow member and said cage being spaced apart a predetermined distance in said containment vessel, said cage having a solid semicircular front portion facing said elbow member, and a solid circular lower face remote from said lid, and a foraminous semicircular rear surface remote from said elbow member, said foraminous semicir-



cular rear surface extending from said circular lower surface to a shallow solid semicircular abutment mounted integrally with said lid, a "Vee" shaped abutment of substantially less depth than said cage surrounding said cage, mounted integrally on the lower surface of said lid and pointing toward said elbow member, and a tube and wand pickup for connection to said inlet aperture, for conveying the air soil mixture to said containment vessel, said elbow member, said cylindrical cage, and said "Vee" shaped abutment combining in the operation of said vacuum cleaner to minimize the flow of wet soil mixture into said air pump.

4,142,271
CABINET HINGE

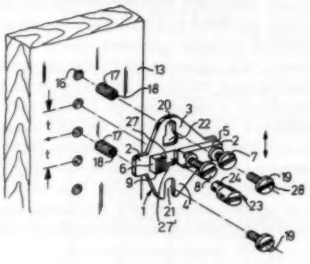
Peter Busse, Vlotho, Fed. Rep. of Germany, assignor to Richard Heinze, Fed. Rep. of Germany

Filed Aug. 5, 1977, Ser. No. 822,260

Claims priority, application Fed. Rep. of Germany, Aug. 5, 1976, 2635237

Int. Cl.² E05D *7/04*

U.S. Cl. 16—129 **13 Claims**



1. In a cabinet hinge base plate attachable to one cabinet part through fastening means engaging said cabinet part, and being operable to receive a hinge component bearing at least one hinge pin for adjustable positioning of said hinge component along the two axes perpendicular to the axis of said hinge pin, the improvement which comprises adjustment means comprising an eccentric element rotatably mounted on said cabinet part and an abutment surface on said plate cooperating with said eccentric element to urge said plate along an axis parallel to that of said hinge pin, said plate further having slots running

parallel to the axis of said hinge pin and operable to receive said fastening means.

4,142,272

ADJUSTABLE-POSITION PIVOT MECHANISM FOR PIVOTED WINDOWS

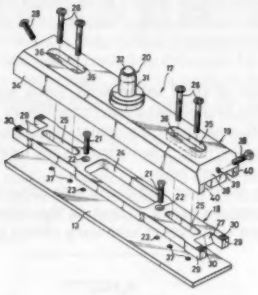
Eiryo Oogami, and Nobuaki Tsurukawa, both of Kurobe, Japan, assignors to Yoshida Kogyo K.K., Tokyo, Japan

Filed Aug. 12, 1977, Ser. No. 824,253

Claims priority, application Japan, Aug. 13, 1976, 51-109090[U]

Int. Cl.[2] E05D *7/04*

U.S. Cl. 16—130 10 Claims



1. An adjustable-position pivot mechanism for cooperating with another pivot mechanism for pivotally holding a window sash within a supporting frame, comprising in combination:

(a) a stationary base adapted to be secured to one of the constituent members of the supporting frame;

(b) a movable base on said stationary base;

(c) a pivot projecting from said movable base away from said stationary base for engaging the window sash;

(d) guide means constraining said movable base to movement relative to said stationary base in the longitudinal direction of the one supporting frame member within limits;

(e) adjusting means carried by said bases for adjustably moving said movable base relative to said stationary base at least in the longitudinal direction of the one supporting frame member, said adjusting means comprising a pair of abutments at opposite ends of said stationary base, and a pair of threaded elements threadedly extending through respective ends of said movable base into abutting engagement with the respective abutments of said stationary base, said abutments of said stationary base being disposed at an angle to the general plane of the one supporting frame member, and said threaded elements being disposed normal to the respective abutments, whereby said movable base can be adjustably moved away from or back toward said stationary base by said threaded elements and moved in the longitudinal direction of the one supporting frame member; and

(f) means for securing said movable base to the one supporting frame member via said stationary base in a desired position of said movable base relative to said stationary base.

4,142,273

STUFFING HORN CONSTRUCTION FOR SAUSAGE MAKING MACHINE

Robert W. Gay, Cary, N.C., assignor to Rheem Manufacturing Company, New York, N.Y.

Filed Nov. 4, 1977, Ser. No. 848,633

Int. Cl.[2] A22C *11/02*

U.S. Cl. 17—41 10 Claims

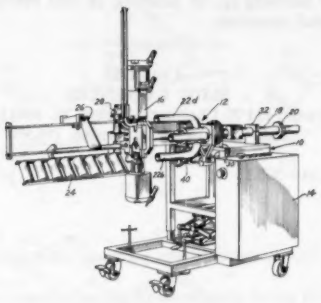
1. An improved stuffing horn assembly for transporting and discharging comminuted products into a casing and for use in combination with a casing clipper and means for pumping said products through the horn assembly into the casing, said horn assembly, comprising, in combination:

a mounting structure;

an inner manifold tube with a center passage open at one end and a lateral discharge opening toward the opposite end, said manifold tube being mounted on the mounting structure;

means for connecting the open end with a product source;

an outer tube slidably mounted on the manifold tube and concentric therewith, said outer tube also being rotatable with respect to the manifold tube;



at least two branch tubes projecting from the outer tube and defining a passage through the outer tube and a product discharge opening for each branch tube;

means for rotating the outer tube on the manifold tube to any one of a plurality of indexed positions aligning a passage through one branch tube with the lateral discharge opening of the manifold tube; and

means for slidably positioning the outer tube on the manifold tube to any one of a number of indexed positions including a position aligning a passage through one branch tube with the lateral discharge opening.

4,142,274

GUIDE INSTALLATION FOR A BELT-BAND ADAPTED TO BE WOUND-OFF OR ON A MAGAZINE ROLL OF A SAFETY BELT SYSTEM

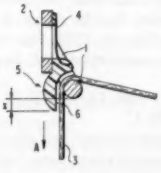
Hansjürgen Scholz, Echterdingen; Walter Jahn, Sindelfingen, and Jürgen Gimbel, Gechingen, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 1, 1977, Ser. No. 783,738

Claims priority, application Fed. Rep. of Germany, Apr. 1, 1976, 2613987

Int. Cl.[2] B60R *21/10;* A62B *35/02*

U.S. Cl. 24—163 R 7 Claims



1. A deflection fitting associated with a belt-band adapted to be wound on and off a magazine roll of a safety belt system, said deflection fitting comprising:

a deflection web constituting a first part of said deflection fitting and having a circumference, said circumference

having a portion arranged for passage of the belt-band thereover, and

a guide installation constituting a second part of said deflection fitting, said guide installation having a first portion surrounding said portion of said circumference of said deflection web and having a second portion extending substantially parallel to the extension direction of said belt-band, said first portion of said guide installation being separated from said deflection web in the area where the belt-band passes over said portion of said circumference to define a spacing, said spacing being smaller than twice the thickness of said belt-band,

whereby said guide installation effectively prevents a twisting, doubling-up, or jamming of said belt-band during normal operation.

4,142,275

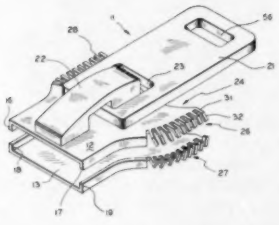
SLIDE FASTENERS

Alwin Krauer, 111 E. Chestnut, Chicago, Ill. 60611

Filed May 16, 1977, Ser. No. 796,995

Int. Cl.[2] A44B *19/26*

U.S. Cl. 24—205.15 R **7 Claims**



1. An improved slide fastener for coupling garment portions together,

said slide fastener comprising:

slider means;

said slider means having a pair of spaced apart opposed co-planar sections;

said co-planar sections each having a tapering flange section for use in selectively locking together opposing rows of interengageable elements, to thereby coupled the garment portions together;

snag preventing means for preventing extraneous material from jamming said slider means, and

said snag preventing means comprising opposing rows of teeth-like tines extending from the periphery of the snag preventing means forward of said tapering sections.

4,142,276

WARP-KNIT SLIDE-FASTENER STRINGER HALF AND METHOD OF MAKING SAME

Helmut Heimberger, Locarno, Switzerland, assignor to Optilon W. Erich Heilmann GmbH, Cham, Switzerland

Filed Sep. 30, 1976, Ser. No. 728,033

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1976, 2615001

Int. Cl.[2] A44B *19/00*

U.S. Cl. 24—205.16 C **9 Claims**

1. A slide-fastener stringer half comprising:

an elongated warp-knitted tape having a pair of opposite faces and a pair of opposing longitudinally extending edges, said tape being knit with:

a plurality of chained warp yarns each forming a respective longitudinally extending warp-pillar loop chain defining a respective longitudinally extending wale,

a first inlaid weft yarn laid into and extending only said first inlaid weft yarn passing between the two chains from course to course, over two of said chains at one of said edges,

a group of second yarns in tricot-type pattern lapped into all of said chains across the full width of said tape, said second yarns bridging three warp chains from course to course and

a group of third inlaid weft yarns laid into all of said chains except that chain immediately at said one edge, a continuous monofilamentary coupling element having

a succession of turns and lying on one face of said tape along said one edge; and

stitching overlying said turns, extending through said tape, and having a needle thread on the other face of said tape between said two of said warp chains at said one edge.

4,142,277

CORDUROY CUTTING MACHINE

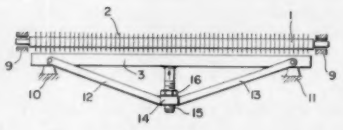
Franz-Josef Gierse, Siegen, Fed. Rep. of Germany, assignor to Franz Muller, Monchen-Gladbach, Fed. Rep. of Germany

Filed Jun. 16, 1977, Ser. No. 807,297

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1976, 2626869

Int. Cl.[2] D06C *13/08*

U.S. Cl. 26—9 **2 Claims**



1. Corduroy cutting machine having a knife shaft whereon a plurality of circular knives are mounted adjacent one another, and a table cooperating with the knife shaft and having a table edge over which, during operation of the machine, fabric formed with loops that are to be cut open by the circular knives is drawn, the improvement therein comprising means at the table for adjusting and resetting the edge line of the table to a bending of the knife shaft that is dependent upon the operating condition of the machine, said means comprising an adjustable trestle associated with the table.

4,142,278

COMPRESSIVE TREATMENT OF WEB MATERIALS

Richard R. Walton, 10 W. Hill Pl., Boston, Mass. 02114, and George E. Munchbach, Roslindale, Mass., assignors to Richard R. Walton, Boston, Mass.

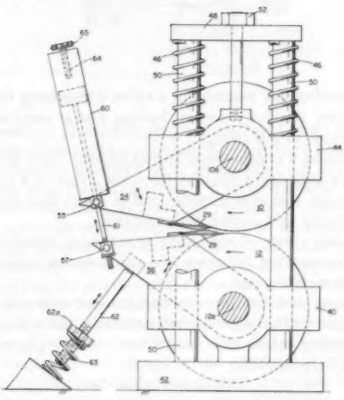
Filed Oct. 29, 1976, Ser. No. 736,859

Int. Cl.[2] D06C *21/00*

U.S. Cl. 26—18.6 **45 Claims**

1. In a machine for longitudinal compressive treatment of a web, comprising a drive nip for driving the web along a web path formed by stable surfaces of a pair of oppositely rotating rolls, and a retarding device on the exit side of the nip, formed by at least one relatively stationary retarding member held next to a given roll, the improvement wherein the initial part of said retarding member defines means providing damming forces, said dam means being resilient in the direction normal to the

plane of tangency defined by the two rolls at their nip to provide a resilient nipping surface inclined to the direction of web travel, downstream thereof said retarding member defining a material-engaging surface lying relatively more parallel to said web direction, said dam means constructed to enable continual flow of the web thereover while imposing resistance to said flow, and said dam means shaped to be positioned in the region of minor divergence of said roll surfaces downstream from the line of centers of said pair of rolls at a distance less than about 5% of the sum of the diameters of said rolls, to terminate therebetween a longitudinal compression cavity of correspondingly short length and height, means for continually maintaining said dam means at said position for steady state running conditions, said dam means thereby cooperative with the adjacent surfaces of said drive rolls to continually maintain in position in advance of said dam means, between the moving surfaces of said two rolls, a longitudinally compacted moving column of web against which fresh web delivered by said drive nip is progressively compressed, said roll surfaces at said cavity effective to continually intimately contact the faces of the web, to support the web against folding upon itself, whereby said web remains continually within its original general plane without gross pleating throughout its longitudinal compressive treatment and said resilient nipping surface effective to enable resilient accommodation of said column as it moves past said dam means while said dam means at a steady position relative to said line of centers.



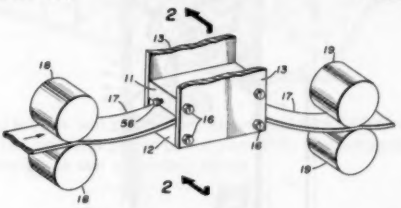
40. In a method of longitudinal compressive treatment of a webb, comprising driving the web forward along a web path by a pair of oppositely rotating, stable-surfaced rolls forming a nip, and retarding the web on the exit side of the nip by the positioning of at least one relatively stationary retarding member held next to a given roll, the improvement comprising opposing the flow of the web from the nip by a dam means on the initial part of said retarding member providing damming forces, said dam means capable of presenting a frontal surface inclined to the direction of said web travel immediately approaching said dam means, and engaging the web downstream thereof with a web-engaging surface lying relatively more parallel to said web direction, said dam means enabling continual flow of the web thereover while imposing resistance to said flow, the position of said dam means being maintained in a steady state running position in the region of minor divergence of said roll surfaces downstream from the line of centers of said pair of rolls at a distance less than about 5% of the sum of the diameters of said rolls, to terminate therebetween a longitudinal compression cavity of correspondingly short length and height, said dam means cooperating with the adjacent surfaces of said drive rolls to continually maintain in position in advance of said dam means, between the moving surface of said two rolls, a longitudinally compacted moving column of web against which fresh web delivered by said nip is progressively compressed, said roll surfaces at said cavity effective to continually intimately contact the faces of the web, to support the web against folding upon itself, whereby said web remains continually within its original general plane without gross pleating throughout its longitudinal compressive treatment.

4,142,279

APPARATUS FOR TREATING A TOW OF FILAMENTS WITH A LIQUID

Thomas M. Veazey, Decatur, Ala., assignor to Monsanto Company, Decatur, Ala.

Filed Aug. 3, 1977, Ser. No. 821,262
Int. Cl.[2] D02G *1/00*
U.S. Cl. 28—219 **7 Claims**



1. An apparatus for treating a tow of filaments with a fluid, comprising:

a. an upper member having a downwardly-facing first guide surface,

b. a lower member positioned below the upper member and having an upwardly-facing second guide surface,

c. said members and said guide surfaces being on opposite sides of the tow and so positioned that the path of the tow is bent upward at the trailing edge of the downwardly-facing surface, and

d. nozzles associated with each of said surfaces for directing streams of treatment fluid in layers along said surfaces, each of said nozzles being positioned relative to its associated guide surface in such a manner that the stream of treatment fluid from said nozzles will flow in a layer along said guide surface,

e. said trailing edges of the guide surfaces being constructed in such a manner that the streams leave the surfaces at said trailing edges and pass through the tow.

4,142,280

BOUNCE CRIMP UNIT WITH ANNULARLY SEGMENTED YARN RECEIVER

Philip C. Feffer, Columbia, Md., assignor to Chevron Research Company, San Francisco, Calif.

Filed Aug. 17, 1977, Ser. No. 825,455
Int. Cl.[2] D02G *1/16;* B65H *54/80*
U.S. Cl. 28—254 **6 Claims**

1. In an apparatus for bounce crimping a multi-filament yarn of synthetic resinous material having

a crimper housing having a yarn inlet for receiving the multi-filament yarn to be texturized, a fluid outlet aligned with the inlet, a channel extending between the yarn inlet and the fluid outlet, and a lateral yarn outlet communicating with the channel,

means for supplying a heated fluid to the channel for drawing the yarn into the housing,

a foraminous surface positioned across the channel between the lateral yarn outlet and the fluid outlet, the heated fluid further serving to hurl the yarn against the foraminous surface to axially compress and crimp the yarn filaments and bounce the multi-filament yarn through the lateral yarn outlet, and

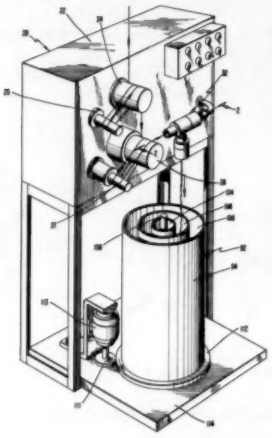
means for collecting the crimped yarn while maintaining the yarn substantially free of longitudinal tension, the improvement being an improved collection means for re-

ceiving and storing the texturized yarn without excessive entanglement comprising:

container means having an axis and a plurality of substantially annular baffles which define a plurality of concentric annular chambers and being operable to receive the texturized yarn from the lateral yarn outlet, the annular baffles being radially spaced from one another by a preselected distance which inhibits toppling of yarn accumulations radially with respect to the container means;

rotary drive means operatively positioned to rotate the container means about the axis while the container means receives the texturized yarn; and

indexing means for aligning each annular chamber and the lateral yarn outlet as an adjacent chamber becomes full of texturized yarn.



4,142,281

MAGNETIC ROLLER FOR ELECTROGRAPHIC DEVELOPING AND/OR REPRODUCING DEVICES

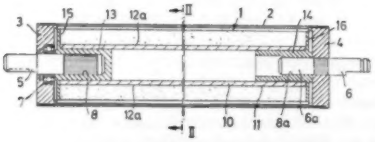
Werner Müller, Godesburg, Fed. Rep. of Germany, assignor to Magnetfabrik Bonn GmbH vorm. Gewerkschaft Windhorst, Bonn am Rhine, Fed. Rep. of Germany

Filed Nov. 9, 1977, Ser. No. 850,048

Claims priority, application Fed. Rep. of Germany, Mar. 6, 1977, 2725109

Int. Cl.[2] B21B *13/02*

U.S. Cl. 29—116 R **20 Claims**



1. In a magnetic roller means for electrographic copying devices of the type which includes two relatively rotatable assemblies, one of said assemblies comprising a cylindrical sheath of nonmagnetic material, the other of said assemblies comprising a plurality of axially extending magnets disposed within the sheath, and means is provided for establishing said relative rotation of one of said assemblies with respect to the other of said assemblies about the axis of the sheath, the improvement which comprises a multi-element carrier means for supporting said magnets within the sheath, the carrier means being provided with means to receive shaft means disposed coaxially with the axis of the sheath and projecting inwardly from the exterior of the sheath for supporting the carrier means for said relative rotation with respect to the sheath, and a plurality of sheet metal strips, a plurality of extruded elements provided with grooves into which the ends of said strips are received in tongue and groove engagement to support the magnets and a hub at each end to support said elements and to receive said shaft means.

4,142,282

METHOD FOR ASSEMBLING A CARTRIDGE-TYPE VALVE

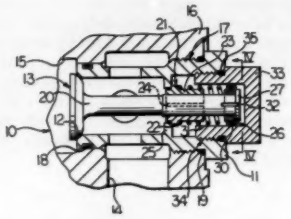
Howard L. Johnson, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 724,145, Sep. 17, 1976, Pat. No. 4,084,609.

This application Jan. 6, 1978, Ser. No. 867,565

Int. Cl.[2] B23P *15/00*

U.S. Cl. 29—157.1 R **6 Claims**



1. A method for assembling a valve comprising the steps of

mounting a valve member, having a stop member formed thereon, in a housing,

positioning a compression spring on said valve member,

compressing said spring by inserting a tool in a slot formed through said stop member and in said valve member and engaging said spring with said tool,

disposing a pair of semi-annular retaining members on said valve member, between said compression spring and said stop member, and

removing said tool from its engagement with said spring to release said spring to permit expansion thereof against said retaining members to urge them into engagement with said stop member.

4,142,283

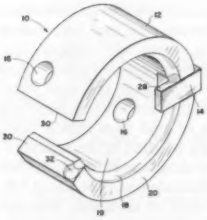
TORSION SPRING WRENCH

Donald R. Walker, 2729 S. 114th E. Ave., Tulsa, Okla. 74129, and Thomas E. Walker, 6930 E. 7th, Tulsa, Okla. 74112

Filed May 23, 1977, Ser. No. 799,348

Int. Cl.[2] B23P *19/04*

U.S. Cl. 29—227 **7 Claims**



1. A wrench for removing a torsion spring from a cone which comprises:

a unitary substantially C-shaped collar having a groove along the inner periphery of one end thereof, at least one radial aperture therethrough, and a radially directed rab-

bet through the collar end in the proximity of the groove; and

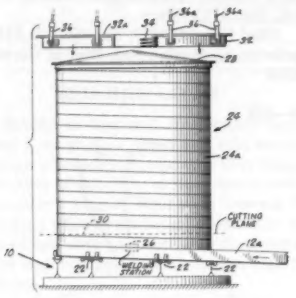
pin means slidably adjustable in the rabbet for axially engaging the end of the torsion spring abutting the cone base to apply axial pressure against the spring for releasing the spring from the cone.

4,142,284

MULTIPLE STORAGE TANK FABRICATION PROCEDURE

Charles P. Steuber, Pelham Manor, N.Y., assignor to Anchortank, Inc., Seabrook, Tex.

Filed May 27, 1977, Ser. No. 801,325
Int. Cl.[2] B23P *17/00*
U.S. Cl. 29—417 **3 Claims**



1. The method of constructing a plurality of large diameter storage tanks of strip material comprising feeding a continuous strip to a support assembly at a single building site which supports the strip for production of a large diameter storage tank structure that includes a plurality of helical convolutions extending upwardly with the edge portions of adjacent convolutions being secured together, severing said tank structure along substantially a horizontal plane above the support assembly, transporting the portion of the severed tank structure that is above said plane from said building site to a use site remote therefrom but within the same general area as the building site for storage of materials at said use site, and continuing the aforementioned steps to complete the production of one or more additional storage tanks transported from said building site to various use sites within said same general area.

4,142,285

TERMINAL FORMING AND INSTALLING APPARATUS

Maurice H. Brown, 11655 S. Mayfield, Worth, Ill. 60482

Continuation-in-part of Ser. No. 738,639, Nov. 3, 1976, Pat. No. 4,068,367. This application Nov. 9, 1977, Ser. No. 849,751
Int. Cl.[2] B23P *23/00*
U.S. Cl. 29—564.6 **14 Claims**

1. An apparatus for simultaneously forming a plurality of terminals from a plurality of lengths of wire and inserting the terminals simultaneously into openings preformed in a plastic part, said apparatus including:

means for simultaneously moving a plurality of lengths of wire held in spaced relation to one another to a severing position,

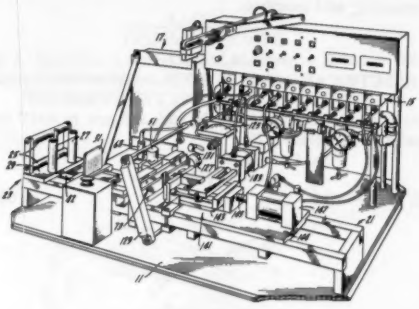
means for simultaneously severing end portions from said lengths of wire at said severing position to form a plurality of terminals,

means for supporting said terminals in spaced relation to one another,

means for supporting a plastic part having openings formed therein for receiving said terminals,

means for moving said plastic part and said terminals into engagement with one another to first seat said terminals in said openings in said plastic part, and

means to increase the distance said terminals extend beyond said terminal supporting means so that further movement of said plastic part and terminals into engagement with



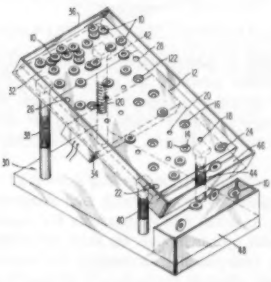
one another will more deeply embed said seated terminals in said openings in said plastic part while supporting said terminals in said supporting means.

4,142,286

APPARATUS AND METHOD FOR INSERTING SOLDER PREFORMS ON SELECTED CIRCUIT BOARD BACK PLANE PINS

Kenneth V. Knuth, Malvern, and John H. Drinkard, Jr., Exton, both of Pa., assignors to Burroughs Corporation, Detroit, Mich.

Filed Mar. 15, 1978, Ser. No. 886,763
Int. Cl.[2] H05K *3/30*
U.S. Cl. 29—626 **17 Claims**



1. A method of inserting solder preforms on selected back plane pins of a circuit board, which comprises the steps of:

providing a template, wherein said template is drilled with a pattern of holes corresponding to the pattern of circuit board back plane pins, the diameter of said holes being at least equal to the diameter of the corresponding circuit board back plane pins, one surface of said template being counterbored at the hole positions corresponding to said selected back plane pins, the diameter and depth of said counterbores being at least equal to the diameter and depth of said solder preforms, respectively;

inserting said solder preforms in all counterbored holes in the surface of said template;

aligning said circuit board back plane above said template with said back plain pins perpendicular to and above the corresponding holes in said template;

moving said circuit board back plane toward and into contact with said template, whereby the pins of said circuit board back plane pass through the corresponding holes in said template after the selected back plane pins pass through the corresponding solder preforms;

clamping said board against said template;

rotating said clamped circuit board and template to position said template above said circuit board;

unclamping said circuit board from said template; and

removing said template.

4,142,287

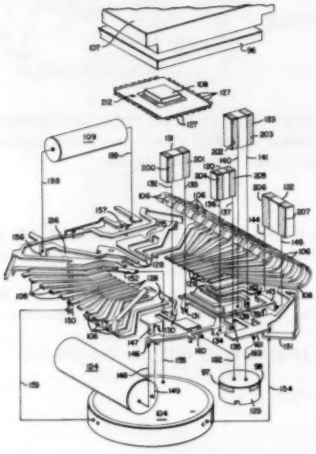
ELECTRICAL DEVICES SUCH AS WATCHES AND METHOD OF CONSTRUCTION THEREOF

Dimitry G. Grabbe, Lisbon Falls, Me., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 27, 1976, Ser. No. 754,817

Int. Cl.[2] H05K *7/14*

U.S. Cl. 29—628 **6 Claims**



1. A method of manufacturing an electronic device containing a panel-like member, an integrated circuit chip, and a plurality of discrete components, said panel-like member having spaced-apart terminal pads located on opposite side portions of one surface thereof, said method comprising the steps of:

stamping a flat lead frame having individual chip conductors for establishing contact with said integrated circuit chip, having terminal pad conductors for establishing contact with said terminal pads on said panel-like member, and having component conductors for establishing contact with said discrete components, at least some of said conductors being connected to other conductors by structural connecting sections of said lead frame,

molding an insulating material on said lead frame to form an insulating body having component openings therein for reception of said discrete components, having a chip-receiving recess therein for reception of said integrated circuit chip, and having tool-receiving access opening therein, said terminal pad conductors extending laterally from said body, said chip conductors extending into said chip-receiving recess, said component conductors extending into said component-receiving openings and said connecting sections being in said access openings,

reversely bending said terminal pad conductors towards and over said body whereby end portions of said terminal pad conductors form contact springs which are spaced from, and flexible towards said body,

inserting tooling means into said access openings and electrically interrupting said structural connecting sections,

positioning said integrated circuit chip in said chip-receiving recess and connecting the active areas of said chip to said lead frame chip conductors, inserting said discrete components into said discrete component openings thereby electrically to connect said components to said component conductors, positioning said panel-like member on said body with said terminal pads against said contact springs, and

clamping said panel-like member against said body with said terminal pads on said panel-like member against said contact springs whereby said chip and said discrete components are connected to each other and to said terminal pads in accordance with a predetermined circuit arrangement.

4,142,288

METHOD FOR CONTACTING CONTACT AREAS LOCATED ON SEMICONDUCTOR BODIES

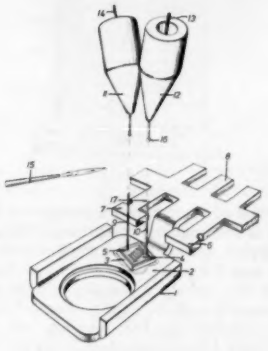
Wieland Flammer, Cleebronn; Roland Weber, Heilbronn-Bockingen; Gerhard Weiher, Brackenheim, and Jakob Troner, Heilbronn-Bockingen, all of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 24, 1977, Ser. No. 771,513

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1976, 2608250

Int. Cl.[2] H01R *43/02*

U.S. Cl. 29—628 **8 Claims**



1. A method of contacting metallic contact areas located on semiconductor bodies by means of connecting wires each passed through a respective capillary, comprising the steps of: connecting at least the ends of two connecting wires passed through capillary openings to two metallic contact areas located on one surface of the semiconductor body by means of thermocompression; after connecting said connecting wires to said metallic contact areas, removing each capillary to a certain distance above said semiconductor surface; severing said wires by burning same below the capillary openings and at a desired distance from the metallic contact areas; passing a wedge between the pieces of wire connected to the metallic contact areas and projecting from said semiconductor surface, said wedge at the same time spreading out and bending the pieces of wire so that the free wire ends come into contact with associated prongs of a structured contact strip, and finally firmly connecting these free wire ends to said prongs by means of thermocompression with the aid of a pressure device.

4,142,289

COIL WINDER

Alfred A. K. Roethke, Menomonee Falls, Wis., assignor to Ameco Corporation, Menomonee Falls, Wis.

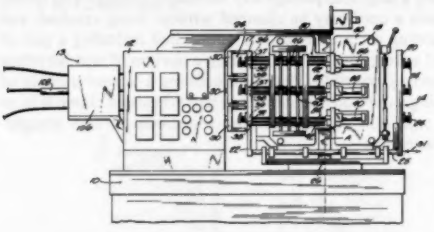
Filed Nov. 21, 1977, Ser. No. 859,061

Int. Cl.[2] H02K *15/08*

U.S. Cl. 29—736 **6 Claims**

1. A coil winding apparatus for winding wire on a bobbin having terminals, said apparatus comprising a frame, a stator holder supported on said frame, a rotating winding flyer supported on the frame, tap pulling needles, means on said frame

for reciprocating said needles through bobbin terminals into and from wire tap pulling position, motor means to rotate the flyer at first and second speeds, with said second speed being slower than the first speed, wire feed means supported on said frame to positively feed the wire from a supply roll, and control circuit means to operate said flyer motor means, said wire feed means and said means for reciprocating the wire pull needles in a timed sequence at a pre-selected number of wire



turns on the bobbin so that said flyer motor means causes rotation of said flyer at slow speed and said tap pull needle advances through a bobbin terminal to a wire engaging position during rotation of said flyer at slow speed, and said wire feed means forming a loop of slack wire between the bobbin and the wire supply prior to retraction of said wire tap needle, and retraction of said wire pull needle to draw the slack wire through one of said bobbin terminals before said flyer completes a revolution.

4,142,290

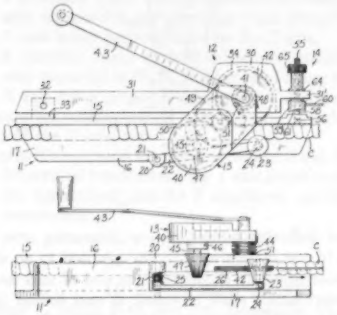
WELDED ARMOR CUTTING TOOL

Lucien C. Ducret, 8 Apache Pl., Riverside, Conn. 06878

Continuation of Ser. No. 688,134, May 20, 1976, abandoned. This application Nov. 7, 1977, Ser. No. 848,902

Int. Cl.[2] B21F *13/00*; B26B *27/00*

U.S. Cl. 30—90.9 **3 Claims**



1. A cutting tool for making an axially extended incision in the surface of an armored cable comprising a saw blade housing having an elongated lever portion and a blade guard, a cable guide pivotally connected to said lever portion and having elongated angularly disposed walls defining a path for the cable, means for resiliently urging the cable into said path, a circular saw blade carried on a main shaft journaled in the blade guard, said saw blade projecting a predetermined distance into said path in a position to cut through the surface of the cable, means for driving said saw blade, a serrated cable driving roller on a shaft and engageable with the cable from a direction opposite to said walls for moving the cable relatively to the tool and a reduction gear train between the main shaft and the driving roller shaft, the gear train being enclosed in a housing and the housing being pivoted on said main shaft, whereby the driving roller is moveable relative to the cable guide.

4,142,291

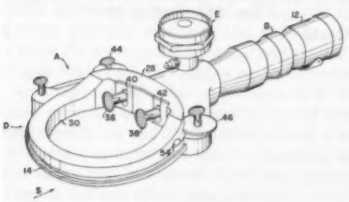
TRIMMING KNIFE

Louis A. Bettcher, Amherst, Ohio, assignor to Bettcher Industries, Inc., Birmingham, Ohio

Filed Oct. 17, 1977, Ser. No. 842,585

Int. Cl.[2] B26B *29/00*

U.S. Cl. 30—276 **7 Claims**



1. A gauge for a hand-held and manipulated knife for trimming a comistable product, such as, meat, and having a handle projecting radially from an annular ring-like member of short axial length in which a ring-like blade of short axial length having an annular cutting edge at one end is rotatably supported and power driven, said gauge assembly comprising an annular tubular-like member having a base part at one side adapted for connection to the knife and a flexible ring-like gauge part proper integral with said base part, at least one end of said gauge member being planar and joined by an exterior conical surface diverging therefrom.

4,142,292

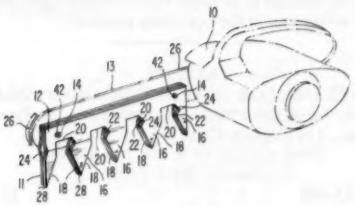
CHAIN SAW ADAPTER FOR USE PARTICULARLY FOR TRIMMING HEDGES AND CUTTING BRUSH

Ray R. Ulrich, 30 Van Duyn Dr., Trenton, N.J. 08618, assignor to Ray R. Ulrich, Sr., Trenton, N.J.

Filed Jan. 16, 1978, Ser. No. 869,884

Int. Cl.[2] B27B *17/02*

U.S. Cl. 30—371 **10 Claims**



1. A chain saw adapter for use particularly for trimming hedges and cutting brush which comprises:

(a) a mounting member adapted to be fixedly secured to a chain saw chain guide; and

(b) a plurality of dividers fixedly secured to said mounting member to operably divide the individual members of the hedge to be trimmed into hedge member groupings as the adapter passes therethrough, said mounting member further including a stopping surface adjacent the path of movement of the chain teeth and between said dividers, said dividers and said stopping surface defining dividing channels therebetween to receive the individual hedge member groupings therein for cutting, said dividers including:

(1) dividing surfaces for guiding the hedge members into hedge member groupings within each said dividing channel; and

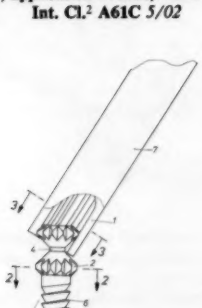
(2) gathering surfaces oriented at an oblique angle with respect to the movement direction of the chain teeth, said gathering surfaces defining a cutting zone by forming an acute angle with respect to the stopping surface positioned thereadjacent.

4,142,293

ANCHORING SCREW FOR DENTAL FILLINGS

Jacques Tiéche, 74 560 Monnetier-Mornex, France

Filed Feb. 28, 1977, Ser. No. 773,131
Claims priority, application France, Mar. 3, 1976, 76 07571
Int. Cl.[2] A61C *5/02*
U.S. Cl. 32—15 **3 Claims**



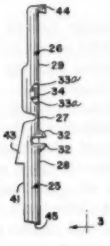
1. An anchoring screw for dental fillings, in combination with an actuating socket for screwing said screw into a tooth, said screw comprising a generally conical threaded shank having a thread of sharp-angled saw-tooth profile, a first crown formed on the upper end of the shank, a second crown formed coaxially above the first crown and separated from the latter by a narrow neck defining a circular groove between said first and second crowns, each crown having a circular toothed profile, said actuating socket being of substantially circular hollow cross-section with a toothed inside for actuating cooperation with said circular toothed profile of said second crown, said circular groove of said neck permitting said socket to be inclined at an angle of 0 to substantially about 40° from the screw axis in the operating position.

4,142,294

CORD CLAMP FOR DRAFTING BOARD ASSEMBLY

William A. Adair, Des Plaines, Ill., assignor to Teledyne Industries Inc., Los Angeles, Calif.

Filed Apr. 21, 1978, Ser. No. 898,941
Int. Cl.[2] B43L *13/02*
U.S. Cl. 33—80 **12 Claims**



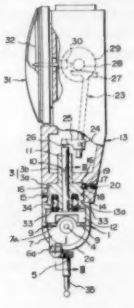
6. In a drafting board assembly including a drafting board having a drawing surface thereon, a straight-edge assembly, and cord mounting means attached to said board for retaining said straight-edge assembly thereon, the improvement wherein said cord mounting means comprises a cord clamp of integrally molded construction including two mating but not identical halves joined together by a clam shell-type hinge, one of said halves defining a mounting half adapted for engagement with said drafting board and the other of said halves defining a swinging half, said halves including surfaces adapted for mating engagement when said clamp is in the closed condition, at least one of said mating surfaces including recesses thereon defining a labyrinth passageway extending through said clamp in which a cord may be clamped without being crushed, and said mating surface on said mounting half including a pair of spaced apart protrusions straddling a portion of said labyrinth passageway on said surface and defining a keeper capable of retaining a cord on said mounting half when said clamp is in an open condition during base line adjustment of said straight-edge assembly.

4,142,295

TEST INDICATOR

Shingo Nishina, and Tokuzo Nakaoki, both of Kawasaki, Japan, assignors to Kabushiki Kaisha Mitutoyo Seiskusho, Tokyo, Japan

Filed Nov. 30, 1977, Ser. No. 856,107
Claims priority, application Japan, Dec. 28, 1976, 51-159431
Int. Cl.[2] G01B *3/22*
U.S. Cl. 33—172 B **3 Claims**

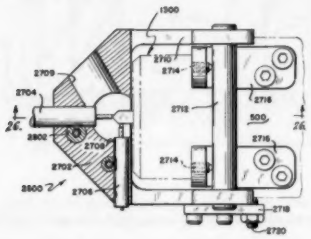


1. A test indicator comprising, a measuring arm, a cam connected to the measuring arm and pivoted to an end of a holder, a measuring tip secured to the end of said measuring arm; an intermediate shaft mounted in said holder for axial displacement; cooperating means on said cam and said intermediate shaft for displacing said shaft axially in response to pivotal movement of the measuring arm and comprising a contact surface on said said shaft and facing toward said cam, and a pair of spherically curved contact members on said cam and engaging the contact surface of the shaft, said contact members being on opposite sides of and spaced the same distance from the axis of said shaft; a casing; means in said casing for magnifying the displacement of said intermediate shaft; means for mounting said holder on said casing for rotational adjustment of said holder with respect to the casing about the axis of said shaft and wherein said holder has a plurality of recesses circumferentially spaced apart at specific angles around its body; a ball engagable in said recesses is held in the casing; said ball is urged toward said body by a spring, and a screw threaded into the casing provides for adjusting the force of said spring.

4,142,296
TOOL CALIBRATION SYSTEM FOR MICROMACHINING SYSTEM

Donald M. Miller, Sunnyside, Wash., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Division of Ser. No. 750,317, Dec. 14, 1976, Pat. No. 4,083,272. This application Dec. 14, 1977, Ser. No. 860,653
Int. Cl.[2] G01B 5/00
U.S. Cl. 33—181 R 2 Claims



1. A tool calibration system for use in combination with a micromachining tool, the micromachining tool comprising a tool head mounted in one end of a tool bar, and having a X axis, a Y axis, and a Z axis; the tool calibration system comprising a tool calibration fixture which comprises:

a yokelike structure having a triangular head, a cavity in the triangular head, a port communicating a side of the triangular head with the cavity, yoke arms integral with the triangular head and extending along each side of the tool head and the tool bar, a support rod fixed to the yoke arms and engaged by a plurality of spring plungers mounted in a plurality of clips fixed to a top surface of the tool bar to place the cavity around a tool bit which may be mounted to an end of the tool head;

a Z axis linear variable differential transformer adjustably mounted in the triangular head along the Z axis, the Z axis extending along an axis of the tool bar;

a Y direction linear variable differential transformer adjustably mounted in the triangular head along the Y axis, the Y axis being perpendicular to the Z axis,

a X direction linear variable differential transformer adjustably mounted in the triangular head along the X axis, the X axis being perpendicular to the Y axis and the Z axis;

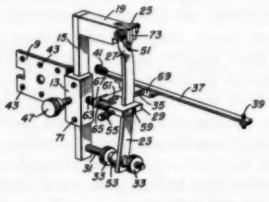
means for positioning the yokelike structure along the X axis and the Z axis; and

means for retaining the positions of the X axis linear variable differential transformer, the Y axis linear variable differential transformer, and the Z axis linear variable differential transformer.

4,142,297
ARCHER'S BOW SIGHT

Anthony L. Altier, P.O. Box 286, Honesdale, Pa. 18431

Filed Dec. 27, 1977, Ser. No. 864,264
Int. Cl.[2] F41G 01/46
U.S. Cl. 33—265 6 Claims



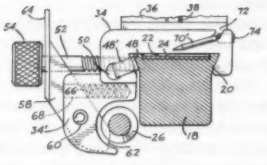
1. An archer's bow sight comprising: a sight span having spaced apart front and rear sight elements, and means for adjustably securing said sight span to the riser of a bow including; a slide block, a windage slide bar, means pivotally mounting said slide bar on said slide block for limited pivotal adjustment of the slide bar about a vertical axis generally parallel to the direction of adjustment of the slide block, said windage slide bar projecting laterally from slide block so as to extend generally laterally of said bow, means slidably mounting said sight span on said slide bar for selective positioning of said sight span along said slide bar to correct for cross-wind effects on the flight path of an arrow shot from said bow, means for pivotally adjusting and selectively fixing said slide bar, about said means pivotally mounting said slide bar, relative to said slide block for aligning the front and rear sight elements of said sight span with the bow string, a radius bar, means for adjustably securing said radius bar to said bow, said radius bar being oriented generally vertically, parallel to said bow, and having a longitudinally curved portion thereof with a constant radius of curvature, and means for slidably mounting said slide block on said radius bar for vertical adjustment generally parallel to the longitudinal axis of the bow to enable a vertical adjustment of the sight span for accommodating variations in the distance from the bow to a target, said slide block being selectively secured to said radius bar at a desired position along the curved portion thereof.

5. An archer's bow sight comprising: a sight span having spaced apart front and rear sight elements, and means for adjustably securing said sight span to the riser of a bow, said adjustable securing means including; means for aligning said front and rear sight elements with a bow string, means for moving said sight span to correct for crosswind effects on the flight path of an arrow shot from said bow, and means for vertically positioning said sight span to adjust for variations in the distance from the bow to a target; said sight span including a plurality of vertically spaced apart pairs of front and rear sight elements.

4,142,298
CARRIAGE AND LATCH ASSEMBLY FOR ELEVATION ADJUSTMENT FOR ARCHERY BOW SIGHTS

Gerald I. Killian, 16016 SE. 82nd Dr., Clackamas, Oreg. 97015

Filed Mar. 24, 1978, Ser. No. 889,978
Int. Cl.[2] F41G 1/00
U.S. Cl. 33—265 4 Claims



1. In an elevation adjustment mechanism for an archery bow sight in which a base supports an elongated guide for a sight-mounting carriage and an elongated micrometer screw adjustment and parallel to the guide, the combination therewith of a carriage and latch assembly comprising:

a. a one-piece carriage body proportioned to slidably engage the guide for movement of the carriage body along the length of the guide, the carriage body being arranged to mount an archery bow sight;

b. the carriage body having an integral, lateral, latch-mounting extension arranged to overlie the micrometer screw, said lateral extension having a slot extending perpendicular to the longitudinal axis of the screw, a pivot pin mounted in said extension and across said slot, and

c. a lever mounted on the lateral extension and in said slot for pivotal movement intermediate its ends on said pivot pin,

said pin extending substantially parallel to the micrometer screw,

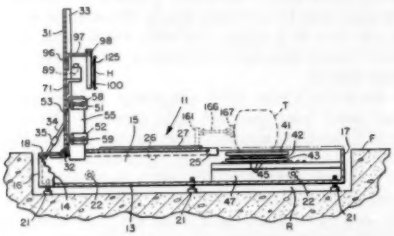
d. the lever having a latch portion at one end disposed for releasable engagement with the micrometer screw and an actuator portion at the opposite end disposed for engagement by a finger for pivoting the lever in the direction to disengage the latch portion from the micrometer screw.

4,142,299

COLLAPSIBLE ALIGNMENT APPARATUS FOR AUTOMOTIVE VEHICLES

Pierre A. Alsina, Rochester, N.Y., assignor to Spin Optic, Honeoye, N.Y.

Filed Dec. 12, 1977, Ser. No. 859,547
Int. Cl.[2] G01B *11/275*
U.S. Cl. 33—288 **17 Claims**



1. Apparatus for use in aligning the front wheels of automotive vehicles, comprising

a housing adapted to be mounted on a garage floor, or the like, and having an opening in a top portion thereof defining a plane,

means for covering said opening in the top portion of said housing, including a first cover movable on said housing between a closed position in which a plane surface thereon registers approximately with the top portion of the housing to cover at least one portion of said opening, and an upright position in which said first cover extends above said housing, and

alignment checking means including a light source mounted on said first cover to be supported thereby within a first section in said housing and beneath the top portion of said housing, when said first cover is closed, and to be supported thereby in an operative position above said housing, when said first cover is in its upright position,

said alignment checking means further including means for directing a beam of light from said source substantially horizontally and at a height sufficiently above the housing to cause the beam to be directed toward the approximate center of a wheel of an adjacent automotive vehicle, or the like, when said first cover is in its upright position.

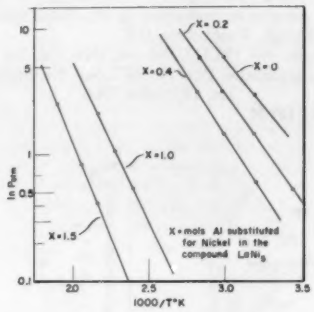
4,142,300

LANTHANUM NICKEL ALUMINUM ALLOY

Dieter M. Gruen, Downers Grove; Marshall H. Mendelsohn, Westmont, and Austin E. Dwight, Downers Grove, all of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 18, 1977, Ser. No. 816,574
Int. Cl.[2] C01B *6/26*; C22C *19/03*
U.S. Cl. 34—15 **3 Claims**

2. The method of storing hydrogen comprising contacting a ternary intermetallic compound having the formula $LaNi_{5-x}Al_x$ where x is in the range of 0.01 to 1.5 with gaseous hydrogen at a pressure above the dissociation pressure of the hydride.

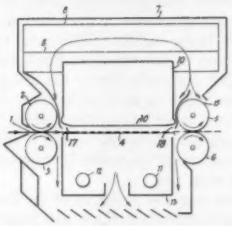


4,142,301

METHOD AND APPARATUS FOR DRYING PHOTOGRAPHIC MATERIAL

Charles C. O. Goodall, Ilford, England, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed Oct. 17, 1977, Ser. No. 842,634
Claims priority, application United Kingdom, Oct. 20, 1976, 43494/76
Int. Cl.[2] F26B *7/00, 13/00*
U.S. Cl. 34—18 **12 Claims**



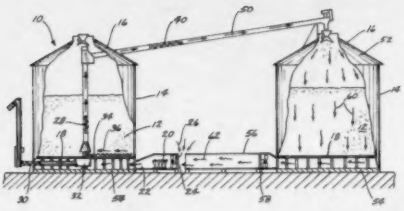
1. A method of drying processed polyethylene coated photographic paper in an enclosed drying chamber through which the exposed and processed polyethylene coated photographic paper bearing an image on one side thereof is caused to travel, which comprises directing radiant heat on the non-image-bearing side of the paper as it is caused to travel through the drying chamber and simultaneously causing a stream of air to flow over the image-bearing side of the photographic paper.

3. An apparatus for drying polyethylene coated photographic paper which comprises an enclosed drying chamber having an open support therein for supporting the photographic paper in its passage through the drying chamber, a source of radiant heat located solely on the side of the support remote from the side which supports the photographic paper, together with means for directing the radiant heat on to the under side of the open support, and means for causing at least one stream of cool air to flow downwards towards the topside of the support, and at least one pair of nip rollers for driving the photographic paper into the apparatus and a pair of nip rollers for driving the photographic paper out of the apparatus.

4,142,302
MULTIPLE BIN HEAT RECYCLED GRAIN DRYING

David R. Primus, Mt. Auburn, Iowa 52313

Filed Mar. 16, 1977, Ser. No. 778,033
Int. Cl.[2] F26B *3/06*
U.S. Cl. 34—31 10 Claims

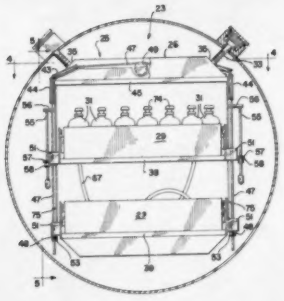


1. A method of grain drying which comprises,
heating a grain in a separate grain drying bin to provide dry grain, while continuously moving the dry grain in said drying bin,
continuously removing in a manner which avoids substantial heat loss, dried but still hot grain from said drying bin,
placing said hot grain in a static position in a separate holding bin to act as a grain filter, said holding bin containing atmospheric air which is warmed by said hot dried grain,
removing through said static dried grain atmospheric air from said holding bin, and
passing said hot atmospheric air which is substantially free from chaff and other grain particles, into said drying bin.

4,142,303
FREEZE DRYING STOPPERING APPARATUS

Douglas S. Fraser, New Platz, N.Y., assignor to FTS, Systems, Inc., Stone Ridge, N.Y.

Filed Sep. 12, 1977, Ser. No. 832,786
Int. Cl.[2] F26B *13/30*
U.S. Cl. 34—92 10 Claims

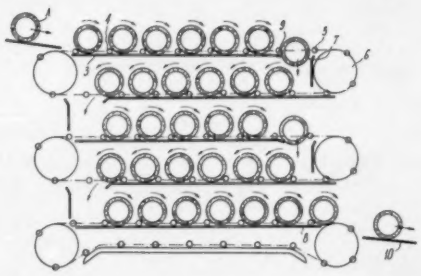


1. A stoppering apparatus for use with a freeze dryer, said freeze dryer including a chamber for enclosing receptacles containing material to be freeze dried, said stoppering apparatus comprising:
a fixed plate mounted in an upper portion of said chamber;
an upper shelf adapted to support a plurality of said receptacles to be stoppered, said upper shelf being suspended beneath said fixed plate;
a lower shelf adapted to support a plurality of said receptacles to be stoppered, said lower shelf being suspended beneath said upper shelf;
cables having one end engaged with said lower shelf, the opposite end of said cables being fixed to a rotatable drive shaft; and,
means to rotate said drive shaft to elevate said lower shelf causing said receptacles supported on said lower shelf to contact the bottom of said upper shelf, said upper shelf being elevated by said lower shelf in tandem therewith to bring the receptacles on said upper shelf into engagement with said plate, whereby said receptacles on said upper shelf are stoppered against said plate, and said receptacles on said lower shelf are stoppered against the bottom of said upper shelf, said means to rotate said shaft being reversible for lowering said shelves to the original position after stoppering for removal of said receptacles from said chamber of said freeze dryer.

4,142,304
APPARATUS FOR GAS TREATMENT OF ARTICLES TRAVERSING AN ENCLOSURE

Aldo Ricci, Treviglio, and Nedo Passerini, Caravaggio, both of Italy, assignors to Saint-Gobain Industries, Neuilly-sur-Seine, France

Continuation of Ser. No. 724,099, Sep. 17, 1976, abandoned. This application Jan. 13, 1978, Ser. No. 869,135
Int. Cl.[2] F26B *25/02*
U.S. Cl. 34—105 4 Claims



1. Apparatus for use in heat treating cylindrical articles, comprising at least two superimposed but spaced foraminous decks, heating means for circulating a gaseous curing current through the decks, and mechanism for rolling a sequence of articles first in one direction on the surface of an upper deck and then in the opposite direction on a surface of a subjacent deck, said mechanism comprising a series of article engaging elements and an endless carrier for said elements, the carrier having a run travelling in said one direction over the surface of said one deck and the other run of said carrier travelling in the opposite direction over the surface of said subjacent deck, mounting mechanism for the carrier including a sprocket arranged at adjacent ends of superimposed runs of the carrier moving in opposite directions, the elements being mounted on the carrier with spacing greater than the diameter of the articles and in position to extend between the articles on the decks and thereby establish movement of the articles over the decks in spaced relation to each other and at a rate conforming with that of the endless carrier, said upper deck being terminated at its downstream end at a point spaced from the sprocket at the end of the cooperating run of the endless carrier to provide an opening larger than the diameter of the articles and located inboard of the sprocket for gravity delivery of articles from the upper deck to the subjacent deck.

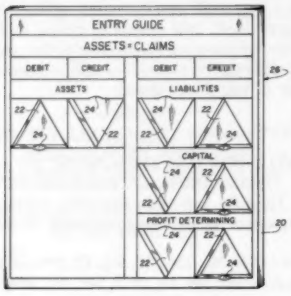
4,142,305
TEACHING AID FOR ACCOUNTING

Snyder M. Zegel, 108 Monell Ave., Islip, N.Y. 11751

Filed May 16, 1977, Ser. No. 797,064
Int. Cl.[2] G09B *19/18*
U.S. Cl. 35—24 R 3 Claims

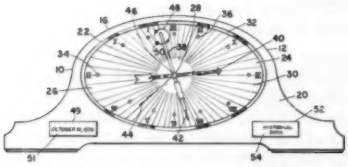
1. A teaching device useful as an aid in teaching the rudimentary principles of accounting comprising:

a. a flat rectangular bookkeeping entry guide bearing accounting indicia thereon;
b. a plurality of bookkeeping entry chips;
c. a plurality of recesses on said entry guide shaped in congruity with said entry chips for receiving same;



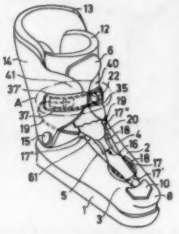
d. a plurality of account cards bearing accounting indicia thereon;
e. means for labeling each account card; and,
f. a plurality of recesses on said account cards shaped in congruity with said entry chips for receiving same.

4,142,306
TIME-SPACE CLOCK
Ben H. Whitlock, 137 Cedarhurst St., Islip Terrace, N.Y. 11752
Filed Dec. 19, 1977, Ser. No. 861,969
Int. Cl.[2] G09B *27/00*
U.S. Cl. 35—43 **4 Claims**



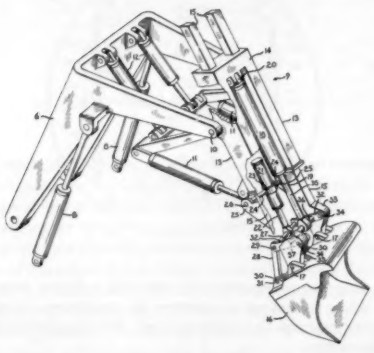
1. A space-time clock comprising
a cabinet having an oval opening,
a space-clock mechanism housed within said cabinet having an oval face fitting said opening,
an oval transparent window mounted in said opening in front of said face,
an oval dial on said face representing the hours of a day,
a round area in the center of said dial representing the sun, having ray lines radiating therefrom,
a rim area of said dial having names of the several planets thereon,
said dial also containing representation of satellites thereon,
an hour hand operated by said mechanism for counterclockwise movement around the center of the dial, having the appearance of a rocket,
a minute earth hand, similarly operated, bearing the legeng: "Speed of Light = about 1.86×10^5 M.P.S."
an earth hand operated counterclockwise by said mechanism around said dial,
said cabinet also having rectangular windows in the front panel thereof located near the base on opposite sides of said oval window, for showing the current month, day and year in one rectangular window,
a calendar operated by said mechanism for such showing, and
a tape for showing through said other rectangular window, astronomical events that are fore-recorded thereon.

4,142,307
SKI AND SKATING BOOT
Hans Martin, Chasernweg 7, Kloten, Switzerland
Filed Jan. 6, 1978, Ser. No. 867,445
Claims priority, application Switzerland, Jan. 7, 1977, 192/77; Dec. 28, 1977, 16025/77
Int. Cl.[2] A43B *11/00*; A43C *11/00*; A43B *5/04*
U.S. Cl. 36—50 **7 Claims**



1. A ski and skating boot of the type having closing flaps and a fastening, the fastening including:
a first tension member guided alternately between the closing flaps by guides to cover the insertion opening in the upper part of the boot located in the vicinity of the instep,
a tightening fastener connected to the end of the first tension member, the fastener including:
a tightening lever located on one closing flap,
a fastening clip on the other closing flap, the clip being connected to the end of the first tension member,
wherein the improvement comprises that said tightening lever is connected to one end of a second tension member also guided alternately between said closing flaps by guides.

4,142,308
LINKAGE MECHANISM FOR DIGGING IMPLEMENT
Sheldon J. Brandtjen, Green Bay, Wis., assignor to Northwest Engineering Company, Green Bay, Wis.
Filed Mar. 1, 1978, Ser. No. 882,079
Int. Cl.[2] E02F *5/02, 3/74*
U.S. Cl. 37—103 **13 Claims**



1. In a crane-excavator or the like having a boom, a saddle mounted to said boom, a stick longitudinally translatable along said saddle, and a material handling implement mounted to said stick for pivotal movement about a transverse roll axis between extreme positions, the combination comprising:
(a) a stick cylinder connected to said saddle and with said stick cylinder having a ram extending longitudinally toward said implement,
(b) an implement cylinder connected to said stick and fixed against longitudinal movement relative thereto and with

said implement cylinder having a ram extending longitudinally toward said implement,

(c) control means to actuate said rams simultaneously,

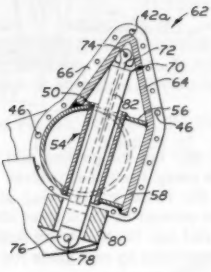
(d) and means connecting said rams with said implement in a manner so that, when said control means actuates said rams, the force moment of implement pivoting about said roll axis reflects the force of both said rams.

4,142,309

SCRAPER BOWL-LIFT APPARATUS

Carroll R. Cole, Decatur, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Feb. 17, 1978, Ser. No. 878,859
Int. Cl.[2] E02F 5/00
U.S. Cl. 37—126 R **15 Claims**



1. In a scraper bowl-lift apparatus having a draft frame, a gooseneck, a spreader member, a pair of draft arms, and a bowl member, the improvement comprising:

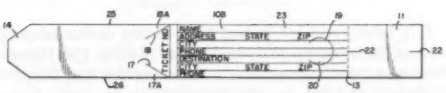
at least one motor having a longitudinal centerline and first and second end portions and passing through the spreader member, said first end portion being pivotally maintained relative to the spreader member, said second end portion being pivotally maintained relative to a preselected portion of the bowl member for passing the longitudinal centerline of said motor through said spreader member.

4,142,310

SELF-LOCKING BAGGAGE TAG

Robert E. Groselak, 901 S. Owen, Mt. Prospect, Ill. 60056, and Albert L. Podgor, 3625 N. Pontiac Ave., Chicago, Ill. 60634

Filed Apr. 11, 1977, Ser. No. 786,420
Int. Cl.[2] G09F 3/04
U.S. Cl. 40—21 R **1 Claim**



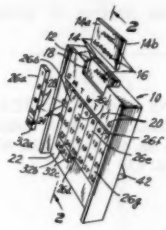
1. A self-locking baggage tag assembly formed from a single continuous sheet of tough durable high density polyethylene material including bonded plastic fibers such as spunbonded olefin, a first section having an exterior surface and an interior surface adapted to be attached to a piece of baggage including a claim number on the first section and a matching number on a second section, said first section including a tapered nose section, an aperture defined in said first section and destination and travel identification information printed on an exterior surface of said first section, self-locking means operable when said nose section has been inserted through said aperture to retard removal of said nose from said aperture, said self-locking means including a pair of wings formed in said first section by a pair of slits each inclined at an angle to the linear axis of said sheet of material, each slit extending inwardly from an edge of said tag assembly and a passenger identification portion disposed between said nose portion and said aperture printed on said interior surface to provide for entry of pertinent passenger identification information, a flap member initially disposed within said aperture but adapted to be bent out of the plane of said sheet to expose said aperture, the second claim check section being detachably connected to said first section whereby when said tag assembly is secured in place around the handle of a piece of baggage the passenger identification information is concealed from plain view, and at least one slit in said second section extending across a portion thereof.

4,142,311

PERMANENT CALENDAR

Ronald S. Lane, 406 Deer Creek Dr., Plainsboro, N.J. 08536

Continuation-in-part of Ser. No. 722,925, Sep. 13, 1976, abandoned. This application May 19, 1977, Ser. No. 798,273
Int. Cl.[2] G09D 3/02
U.S. Cl. 40—107 **9 Claims**



1. An improved permanent calendar assembly to display any month of the year and reflect the number of days in the desired month, said assembly having a date column area, a plurality of date columns, and means to detachably mate said columns to said date column area, the improvement comprising:

a series of reversible mounting structures secured to the lower end of three of said date columns;

said structures having two sets of opposed surfaces, one set of surfaces being unnumbered, the other set of surfaces having the numerals "29", "30", and "31" placed thereon respectively;

whereby the three specified date columns may have their respective mounting structures easily adjusted to precisely reflect the correct length of a 29, 30 or 31 day month with either the unnumbered surfaces or the surfaces with the appropriate numerals in visual display, the mounting structures being retained in securement to the date columns while said columns hang from the date column area, said mounting structures being uneffected by gravitional slip in the absence of underlying support.

4,142,312

STATION SET FOR MOBILE RADIOTELEPHONE UNITS

Rembert R. Stokes, Middletown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

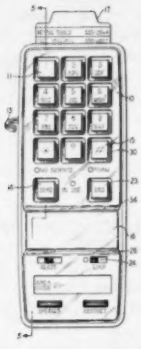
Continuation-in-part of Ser. No. 775,431, Mar. 8, 1977, abandoned. This application Jul. 20, 1977, Ser. No. 817,353
Int. Cl.[2] G09F 3/20, 13/18, 23/06
U.S. Cl. 40—336 **24 Claims**

1. A telephone station set having dialing means and further comprising

a card-receiving pocket in said set and having an entry slot in a surface of said set adjacent to said dialing means, and

a flexible card having at least one surface conditioned to receive writing, said card being so configured with respect to said slot that insertion of said card through said

slot into said pocket deforms said card sufficiently to engage frictionally the slot sides for holding said card in



selectable different degrees of penetration into said pocket.

4,142,313

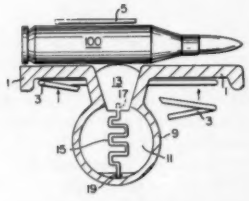
MAGAZINE STATUS INDICATORS

Daniel D. Musgrave, 8201 Caraway St., Cabin John, Md. 20731

Filed May 18, 1978, Ser. No. 907,165

Int. Cl.[2] F41C *27/14*

U.S. Cl. 42—1 B **20 Claims**



1. In a cartridge magazine, acoustic means positionally adapted to be capable of providing a sonic indication concerning the state of supply of cartridges in said magazine.

4,142,314

RECOIL ASSEMBLY FOR A FIREARM ADAPTER

John P. Foote, Marietta, Ga., assignor to U.S. Armament Corporation, Gretna, La.

Division of Ser. No. 627,743, Oct. 31, 1975, Pat. No. 4,098,016. This application Feb. 25, 1977, Ser. No. 772,112

Int. Cl.[2] F41C *11/00*

U.S. Cl. 42—16 **6 Claims**

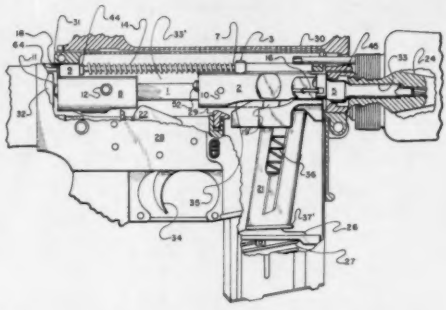
1. In an adapter for converting an at least partially automatic firearm to use different size ammunition, the firearm including a chamber, the adapter having a barrel insert for being positioned in the breech end of the firearm chamber of said firearm and connected by an elongated fixed connection to a fixed receiver, said fixed connection having mounted thereon and intermediately positioned a longitudinally movable bolt, said bolt being provided with a recoil system attached thereto, the improvement in the recoil system for the bolt comprising:

a rear lug mounted on the top of the fixed receiver with a hole therethrough whose center axis is essentially parallel to the longitudinal axis of the adapter, said rear lug having a face facing toward the firearm chamber;

a bolt lug mounted on the top of the bolt with a hole therethrough having essentially the same center axis as said rear lug hole and having a face facing said rear lug face;

a recoil spring of a length greater than the maximum separation distance between said faces of said rear and bolt lugs; and

longitudinally extending guide rod means having a stop and ends for insertion into said holes and through said recoil spring with said stop limiting said guide rod means insertion into said rear lug for guiding said recoil spring to force the bolt away from the receiver and against the barrel insert, the recoil spring being at least generally exposed to the exterior of the adapter along its length at both its sides and top, the bolt being held on to the elongated fixed connection by said guide rod means.



4,142,315

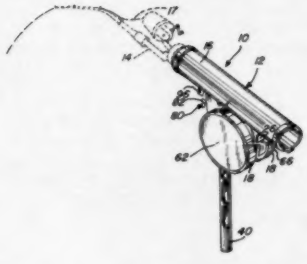
FISHING ROD HOLDER AND HOOK SETTING DEVICE

Gary J. Hoffman, 3860 W. 66th St., Arvada, Colo. 80003

Filed May 2, 1977, Ser. No. 793,073

Int. Cl.[2] A01K *97/12*

U.S. Cl. 43—15 **13 Claims**



1. A fishing rod holder and hook setting device adapted to automatically move said holder and fishing rod supported thereby upwardly to set the hook in response to a downward tension on said fishing rod comprising:

means for releasably holding a fishing rod; a housing adapted for supporting said rod holding means for vertical swinging rotation thereabout;

a pawl and ratchet mechanism including a ratchet wheel rotatably supported and substantially enclosed by housing;

a shaft coupled with said pawl and ratchet mechanism and about which said rod holding means rotates, said shaft extending through said housing;

means for mounting said housing in a fixed position relative to said rod holding means;

means for providing variable resilient tension between said rod holding means and said pawl and ratchet mechanism, said resilient tension means tending to rotate said rod holding means upwardly;

said pawl and ratchet mechanism further including first and second catch members, said first catch member being

mounted to said housing for selective engagement with said ratchet wheel to prevent, when so engaged, rotation of said ratchet wheel when said rod holding means is rotated in a downwardly direction, and said second catch member being mounted to said rod holding means for selective engagement with said ratchet wheel to rotate, when so engaged, said ratchet wheel simultaneously with said rod holding means when said rod holding means is rotated in an upwardly direction, whereby said pawl and ratchet mechanism provides (adapted to permit) selective adjustment of the tension provided by said resilient tension means; and

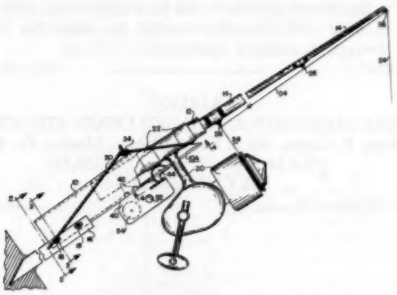
means for releasably retaining said rod holding means in a downward, essentially horizontal position against the tendency of said resilient tension means to rotate said rod holding means upwardly.

4,142,316

FISHING ROD HOLDER AND BITE INDICATOR

Edward M. Greer, 820 Loma Vista Dr., Beverly Hills, Calif.LIF 90210, and Frank J. Spezzano, 3780 Briarwood, Las Vegas, Nev. 89121

Filed Feb. 22, 1977, Ser. No. 770,702
Int. Cl.[2] A01K *97/12*
U.S. Cl. 43—17 **5 Claims**



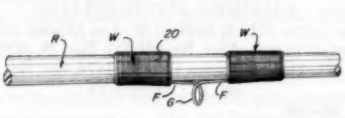
1. A fishing rod holder and bite indicator including: a single tubular member for receiving the handle of a fishing rod, said tubular member having a slot adjacent to the upper end thereof; an electrical indicator unit mounted on the external surface of said tubular member adjacent to said slot; and a spring loaded trigger protruding from said indicator unit extending through said slot to be engaged by the handle of the fishing rod so as to be actuated by angular movement of the handle of the fishing rod when a bite occurs to energize said indicator unit, and the reel of the fishing rod also extending through said slot.

4,142,317

FISHING ROD WITH LINE GUIDES THEREON AFFIXED BY MANUFACTURED ROD WRAPS

Gerald B. Klein, 13451 Stuart Ct., Broomfield, Colo. 80020

Division of Ser. No. 675,822, Apr. 12, 1976, Pat. No. 4,035,454, which is a continuation of Ser. No. 516,034, Oct. 18, 1974, abandoned. This application Jan. 31, 1977, Ser. No. 763,933
Int. Cl.[2] A01K *87/04*
U.S. Cl. 43—24 **8 Claims**



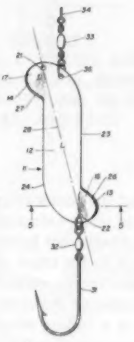
1. In combination with a flexible fishing rod and a relatively rigid rod implement, a tubular ring disposed about the fishing rod and over at least a portion of a relatively rigid rod implement in a tensioned and contracted condition to secure the rod implement to the rod, said ring having an inside diameter at normal room temperature less than the diameter of the rod and being formed of a resilient polymer material, said material being of the type which exhibits the characteristic properties of being capable of being elastically stretched, fixed in its stretched state by lowering the temperature thereof below normal room temperature whereby the elasticity is lost, and subsequently returned towards its original unstretched state by being allowed to warm toward normal room temperature such that the elasticity thereof is regained.

4,142,318

FISHING LURE

Francis E. Morrell, 4350 Percheron La., Arcata, Calif. 95521

Filed May 19, 1977, Ser. No. 798,338
Int. Cl.[2] A01K *85/04*
U.S. Cl. 43—42.23 **5 Claims**



1. A fishing lure comprising:

an elongated plate-like member of uniform thickness having substantially parallel sides and being curved about a transversely extending axis to provide a surface of revolution about said axis, said surface being substantially flat transversely of said member and substantially parallel to said axis and providing a concavo-convex form in a longitudinal center plane of said member perpendicular to said axis;

one end of said member being formed with a portion extending laterally from one of said sides, the other end of said member being formed with a portion extending laterally from the other of said sides, said portions being similarly turned up from the convex side of said member to provide with said ends concavo-convex forms in transverse planes perpendicular to said longitudinal plane, said ends providing convex surfaces in said longitudinal planes and said surfaces and adjacent portions forming concavities in said transverse plane; and

line-and-hook fastening means provided at said ends establishing a line of pull substantially subtending the concave side of said member between said ends in said longitudinal plane.

4,142,319

SPOON-TYPE FISHING LURE WITH OFFSET TAIL

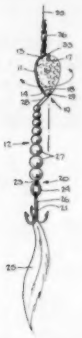
Miroslav Mihaljevic, 526 Orchard Ave., Palisades Park, N.J. 07650

Filed May 3, 1977, Ser. No. 793,292
Int. Cl.[2] A01K *85/00*
U.S. Cl. 43—42.39 **20 Claims**

1. An improved fishing lure of the non-floating type that includes a metal blade, the blade being shaped like the bowl of a spoon with a convex surface and an opposite coextensive concave surface, the two surfaces terminating in a common perimetral edge, the blade having a first attachment located, means for connecting a fishing line to the first attachment

location, a second attachment location on the blade, adjacent to the edge thereof and spaced from the first location, and means for connecting a fish hook to the second attachment location, wherein the improvement comprises:

said means for connecting a fish hook to the second attachment location comprising an elongated stiff weighted tail member, heavier than the blade and having one end rigidly attached to the blade at said second attachment location, the member extending away from the blade in a



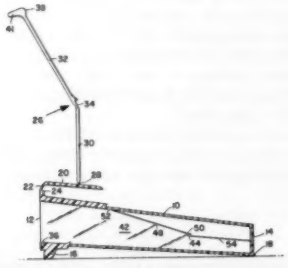
direction such that the center of gravity of the member is offset with respect to an extension of a line between the first and second attachment locations, and means for attaching a fish hook to the other end of the stiff tail member, whereby the leverage exerted by the elongated stiff weighted tail member on the blade is adapted to cause the lure to oscillate in a rolling motion about a line of pull from a fishing line attached to the first attachment location while preventing the blade from spinning.

4,142,320

ANIMAL TRAP AND TRAPPING METHOD

Gene A. Marcolina, 8803 Cheltenham Ave., Wyndmoor, Pa. 19118, and Gordon D. Holl, Kenas Rd., North Wales, Pa. 19454

Filed Feb. 3, 1977, Ser. No. 765,261
Int. Cl.² A01M *23/02*
U.S. Cl. 43—61 **18 Claims**



1. A disposable mousetrap comprising:

means providing an elongated housing of synthetic plastic, having an entrance opening at one of its ends;

means providing a synthetic plastic swinging door, integrally molded with the housing, and adapted to close the entrance opening and thereby form with said housing a substantially air-tight enclosure;

means for urging the door toward its closed condition;

an elongated synthetic plastic arm integrally molded with the housing and the door, secured at one of its ends to the door, and extending through the entrance opening into the interior of the elongated housing;

detent means within the elongated housing;

means carried at the opposite end of the arm for engaging the detent means to prevent said door from closing; and

animal-actuable trigger means carried at said opposite end of the arm for disengaging the arm from said detent means whereby the door closes under the influence of said urging means;

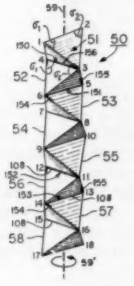
in which the elongated arm is hinged both where it is secured to the door and at an intermediate point, the arm being adapted to extend from the door to the floor of the housing and thence to the detent means when the detent means is engaged by the detent-engaging means at said opposite end of the arm, and in which the door providing means is hinged to the housing-providing means adjacent the edge of the entrance opening opposite said floor, the length of the portion of the arm extending between the door and the intermediate point is less than the maximum distance between the floor of the housing at the entrance opening and the point at which the arm is secured to the door, and the length of the portion of said arm between said intermediate point and said opposite end is at most equal to the maximum distance between the floor of the housing at the entrance opening and said intermediate point, whereby the arm can be molded while outside the housing and thereafter caused to enter the housing through its entrance opening.

4,142,321

THREE-DIMENSIONAL FOLDED CHAIN STRUCTURES

Anthony P. Coppa, 748 S. Highland Ave., Merion, Pa. 19066

Filed Oct. 18, 1976, Ser. No. 733,221
Int. Cl.² A63H *33/16*
U.S. Cl. 46—1 L **23 Claims**



1. A structure comprising a chain of three-dimensional enclosed units, each two adjacent ones of said units in the chain being connected by a hinge, the axis of said hinge being transverse to that of the chain; at each vertex of said chain, the face angles about said vertex summing substantially to 360°; said three-dimensional enclosed units having curved faces.

4,142,322

UNITARY INFLATION DEVICES FOR HELIUM BALLOONS AND THEIR LIKE

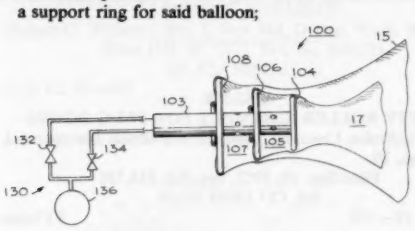
Abraham Zeyra, 1512 S. Bedford St., Los Angeles, Calif. 90035

Continuation-in-part of Ser. No. 644,742, Dec. 29, 1975, Pat. No. 4,034,501. This application Oct. 26, 1976, Ser. No. 735,458
Int. Cl.² A63H *3/06*
U.S. Cl. 46—90 **4 Claims**

1. As an article of commerce, the combination of an inflatable balloon, an inflation device provided with a cylindrical inflation channel coaxial with the inflated balloon when installed in the inflating nozzle integral with said balloon, an elongated rigid manipulating rod, frictionally engaged in said

inflation channel, and a support member, wherein said support member comprises:

a support ring for said balloon;



anchor means adapted to frictionally engage a portion of said manipulating rod; and

rib means interconnecting said anchor means with said support ring.

4,142,323

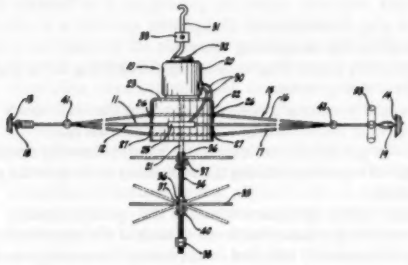
TRACK AND MOTOR WITH RESILIENTLY CONNECTED FLYWHEEL

Louis O. Vitt, 12319 Matthews La., St. Louis, Mo. 63127

Filed Nov. 8, 1976, Ser. No. 739,457

Int. Cl.[2] A63H *18/12, 17/36*

U.S. Cl. 46—257 **8 Claims**



1. An amusement device, comprising:

(a) an elongate suspended track,

(b) means carrying a rotatable shaft, said means including a motor for rotating said shaft and moving said shaft longitudinally of said track,

(c) means for mounting said shaft carrying means to said track and

(d) a flywheel carried by said shaft and including resilient connection means between said flywheel and said shaft to permit rotation of said flywheel in a plane other than a plane perpendicular to said shaft.

4,142,324

PLANT POTTING SYSTEM

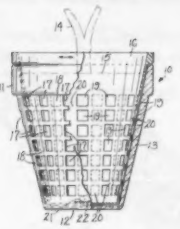
Don Magyar, Jr., 90 Garrish Ave., East Haven, Conn. 06512

Continuation-in-part of Ser. No. 767,745, Feb. 11, 1977, abandoned. This application Feb. 16, 1978, Ser. No. 878,611

Int. Cl.[2] A01C *11/00*

U.S. Cl. 47—75 **4 Claims**

1. A plant potting system comprising a pot having a plurality of apertures in the sides and bottom thereof and a liner having a plurality of apertures in the sides and bottom thereof, said liner being rotatably secured to said pot, said pot side apertures and said liner side apertures being so situated as to be in non-communicating opposition when said pot and said liner are in one angular position relative to each other, and in communicating alignment when said liner and said pot is in a second angular position relative to each other, said pot bottom apertures



and said liner bottom apertures being in communicating alignment in both said first position and said second position.

4,142,325

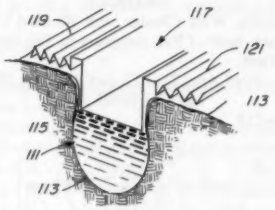
CHANNEL CULTURE ARRAY

George Greenbaum, 790 Boylston St., Boston, Mass. 02199

Filed Oct. 14, 1977, Ser. No. 842,292

Int. Cl.[2] A01G *9/02*

U.S. Cl. 47—79 **23 Claims**



1. A channel culture device which comprises:

a flexible fluid permeable sheet material received in and lining a trench formed in a soil bed, the soil bed adapted to support a plant support system; the sheet material having portions extending laterally outward on the surface of the soil bed;

a trough-like fluid permeble channel having vertically extending walls, a bottom wall, and wings extending laterally therefrom, the channel received in the upper portion of the trench, the wings engaging the laterally extending portions of the sheet material to secure the sheet material whereby fluids may flow through the trough-like channel and into the lined trench.

4,142,326

MASS TRANSIT VEHICLE DOOR CONTROL APPARATUS

William E. Schmitz, Wilkinsburg, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

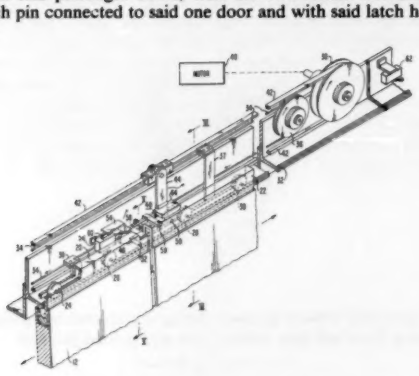
Filed Mar. 17, 1977, Ser. No. 778,527

Int. Cl.[2] E05C *7/06*

U.S. Cl. 49—118 **8 Claims**

4. In door control apparatus for a pair of passenger doors operative with a drive motor providing a movement force to open and close said doors, first means including switch means operative to control said motor and connected to one of the doors, second means including a latch hook pivotally connected to the other of the doors and coupling with the switch means when the passenger doors are closed, and third means pivotally connected to said other door and responsive to said force for moving at least said other door and uncoupling the second means in relation to the first means when it is desired to

open said passenger doors, with the first means including a latch pin connected to said one door and with said latch hook



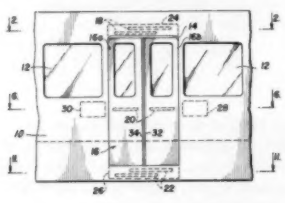
coupling with the latch pin to lock the passenger doors in the closed position.

4,142,327

TRACK MECHANISM ASSEMBLY FOR A LIGHT RAIL VEHICLE

Thomas Griffith, West Chester, and Richard Campbell, Newtown Square, both of Pa., assignors to The Boeing Company, Seattle, Wash.

Filed Aug. 2, 1977, Ser. No. 821,104
Int. Cl.[2] E05D *15/10*
U.S. Cl. 49—215 **39 Claims**



22. In a vehicle having a body with at least one opening for a door, a track mechanism assembly at each opening for supporting the door when closed and during its opening and closing movement, comprising:

(a) a first track mechanism connected to the door and mounted to the vehicle body adjacent generally to the upper part of the opening, said first track mechanism including: a first actuator pivotably mounted at one end to the vehicle body for assisting in opening and closing the door; a first guide rail mounted to the vehicle body for assisting in guiding the door during its opening and closing movement; and a first door support arm connected at one end to the door and engageable at its other end with both the first actuator and the first guide rail thereby transferring part of the door weight to the vehicle body through the first guide rail;

(b) a second track mechanism connected to the door and mounted to the vehicle body adjacent generally to the middle part of the opening, said second track mechanism including: a second actuator mounted to the vehicle body for assisting in opening and closing the door; a second guide rail mounted to the door for assisting in guiding the door during its opening and closing movement; and a second door support arm pivotably mounted to the vehicle body and connected at its two ends to the second actuator and the second guide rail thereby transferring part of the door weight directly to the vehicle body; and

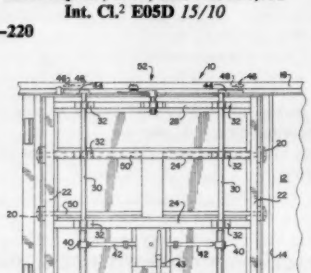
(c) a third track mechanism connected to the door and mounted to the vehicle body adjacent generally to the lower part of the opening for thereby assisting in guiding the door during its opening and closing movement.

4,142,328

SAFETY ROLLER ASSEMBLY FOR PLUG DOORS

Fred C. Saffrahn, Crete, Ill., assignor to Pullman Incorporated, Chicago, Ill.

Filed Sep. 19, 1977, Ser. No. 834,731
Int. Cl.[2] E05D *15/10*
U.S. Cl. 49—220 **5 Claims**



1. A plug door assembly comprising

a wall having an opening therein;

a generally planar plug door filling the opening in the wall in its closed position;

an upper retaining guide positioned on the wall above the opening and including a lower support surface;

a lower guide rail positioned on the wall below the opening;

a pair of vertical operating rods rotatably secured in the plug door;

handle means to cause rotation of the operating rods;

a connecting crank at each end of each of the operating rods;

a roller assembly attached to the lower connecting crank of each operating rod entrained for traveling along the lower guide rail;

a roller attached to the upper connecting crank of each operating rod and received within the upper retaining guide;

the rotation of the operating rods causing the connecting cranks to rotate to lift the plug door out of the opening in the wall so that it may clear said wall and travel along the lower guide rail;

the improvement comprising:

a safety crank, means rotatably securing said crank at one end to the plug door on a vertical axis for pivotal movement about said axis;

a safety roller, securing means mounting said safety roller on a vertical axis on the other end of the crank, said safety roller and securing means being received within the upper retaining guide;

the lower support surface of the upper retaining guide having at least one recess formed in it to receive the safety crank when the plug door is in its closed position; and

a safety shoe pivotally mounted on said other end of the safety crank, said safety shoe being an elongated member longer than the recess in the lower support surface and serving to prevent the safety roller from ever being drawn through the recess in the lower retaining surface and means on said shoe being effective to lift said safety crank and thereby position said safety roller in a nonwithdrawable position within said upper retaining guide upon the door being moved from closed to open position.

4,142,329

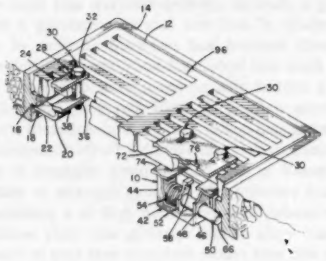
CATCH BASIN GRATE AND RECEIVING FRAME LOCKING ASSEMBLY

Robert C. Williams, Rte. 1, Box 343, Orting, Wash. 98360

Filed Oct. 25, 1977, Ser. No. 845,291

Int. Cl.[2] E05C *21/02*

U.S. Cl. 49—465 3 Claims



1. A combined catch basin grate locking assembly and unlocking lever tool to provide installed catch basin grates which are only conveniently and quickly removed by using the lever tool to unlock the catch basin grate from its receiving frame in turn secured to a supporting perimeter structure about an opening in a roadway or sidewalk, comprising:

(a) a subassembly for placement at one underside edge location on a catch basin grate, comprising, a first vertical depending structure and then an integral outwardly extending horizontal projection portion to underlap the receiving frame of the catch basin grate;

(b) another subassembly for placement at the opposite edge location on a catch basin grate, comprising, two spaced depending structures having aligned holes, a coiled compression spring and a movable spring contact washer having a hole aligned with the aligned holes of the two spaced depending structures, and also the movable spring contact washer having a horizontal projection portion at its top and on its side opposite to the coiled compression spring, and a horizontally movable locking member located throughout the aligned holes and partially within the coiled compression spring and also secured to the movable spring contact washer, and an end retaining washer secured to the horizontally movable locking member at its end nearest the central portions of a catch basin grate and positioned to allow the horizontally movable locking members, under the force the surrounding coiled compression spring, to interfit with a receiving frame, and thereby keep a catch basin grate locked to a receiving frame;

(c) elongated rectangular access structure on the catch basin grate to complementary receive a lever tool above the movable spring contact washer having a horizontal projection portion at its top and on its side opposite to the coiled compression spring; and

(d) a lever tool having an elongated rectangular crosssection to complementary fit the elongated rectangular access structure on the catch basin grate, having a notched portion to fit the horizontal projection portion of the movable spring contact washer, having an upstanding and angularly positioned hand grip portion above the notched portion to be pivoted to move the spring contact washer secured to the horizontally movable locking member, and to thereby move this locking member to an unlocked position so the catch basin grate may be pivoted upwardly and then removed.

4,142,330

THREAD GRINDING MACHINE

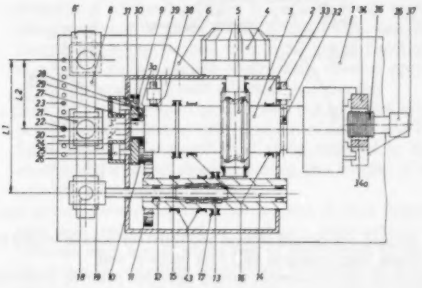
Kurt Thut, Schnottwil, Switzerland, assignor to Osterwalder AG, Switzerland

Filed Nov. 25, 1977, Ser. No. 855,005

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1976, 2657133

Int. Cl.[2] B24B *5/10*

U.S. Cl. 51—95 TG 13 Claims



1. A thread grinding machine for machining a workpiece comprising:

a machine frame;

a headstock;

means mounting said headstock for to-and-fro movement at the machine frame;

means for imparting to-and-fro movement to the headstock;

said to-and-fro movement imparting means comprising:

a threaded rod;

a spindle and transmission means for driving said threaded rod;

an adjustment arm carried by the headstock;

a rod member having opposed ends;

means pivotably mounting one end of said rod member at the adjustment arm of the headstock;

means guiding the other end of said rod member to be axially and pivotably movable in said threaded rod;

a guide element;

a bearing block adjustably connected with the machine frame;

said guide element being pivotably mounted in said bearing block;

said rod member being guided for axial displacement in said guide element;

means for driving said spindle;

a control device for reversing the rotational direction of the driven spindle.

4,142,331

BLADE SHARPENERS

Barrie MacJannette, Harrogate, England, assignor to GSPK (Electronics) Limited, Harrogate, England

Filed Jul. 12, 1977, Ser. No. 815,030

Claims priority, application United Kingdom, Mar. 22, 1977, 12119/77

Int. Cl.[2] B24B *3/54*

U.S. Cl. 51—102 16 Claims

1. A blade sharpening device comprising:

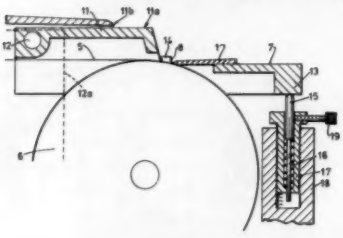
a first surface for sharpening by abrasion an edge of a blade;

a second surface for receiving a flat face of the blade to offer the edge of said blade to said first surface at an angle determined by said second surface thereby to determine the angle to which said edge is sharpened;

a third surface arranged to be abutted by said edge so that said second and third surfaces together define a predetermined limit position for said edge with respect to said first

surface, thereby to limit the amount of material removed from said edge in a sharpening process;

positioning means comprising a resiliently loaded member which is arranged to cooperate with a movable one of said second and third surfaces, in response to movement of said one surface and with a blade to be sharpened in abutment with said second and third surfaces, to allow said one surface to achieve by said movement a reference position



for said one of said second and third surfaces in which said blade edge contacts said first surface; and

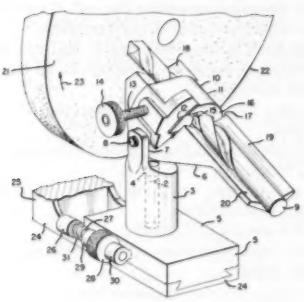
depth-of-cut adjustment means operable prior to a sharpening process to move the position of said one of said second and third surfaces from said reference position by a precisely controlled small amount to a further position, thereby to define the amount of material to be removed from said blade edge in the sharpening process.

4,142,332

DRILL GRINDING FIXTURE

Edmond C. Clarke, 103 River Rd., P.O. Box 275, Orange Park, Fla. 32073

Filed Oct. 3, 1977, Ser. No. 838,470
Int. Cl.[2] B24B *3/26*
U.S. Cl. 51—125 **4 Claims**



1. A drill grinding fixture for double fluted drills of between 1/16 and ½ inch in diameter and for use with a grinding disk having a vertical planar grinding face rotating about a horizontal axis, said fixture comprising a cylindrical pin, means for mounting said pin with its axis vertical and disposed between one-half and three-quarters of an inch in front of said face, a hub member provided with a cylindrical bearing bore for receiving said pin upwardly thereinto, a trough member having a forward end, a rearward end and an upwardly open rectilinear elongated V-shaped groove defined between diverging flat groove walls meeting along a linear groove bottom and extending from one to the other of said ends, said groove walls diverging at equal predetermined angles from a vertical plane through said linear bottom, such angles being measured in a plane perpendicular to said linear bottom, said trough member further comprising a planar face facing toward said forward end, disposed perpendicularly of said groove, and defining a recess of which said face constitutes the rearward wall and which recess interrupts said groove walls spacedly between said ends, said recess opening outwardly laterally of said trough member and being further defined by a laterally extending bottom wall perpendicular to said face and disposed lower than said groove bottom, said bottom wall terminating laterally of said trough member in respectively opposite shoulders located equidistant from the line defined by said linear bottom of said groove, a drill holding clamp assembly comprising a body member having a front face and a planar rear face and having a through opening between said faces extending perpendicularly of said rear face for receiving a drill therethrough with forward and rearward portions of such drill extending from said body, said body member being symmetrical about a central plan perpendicular to said rear face, said opening being defined by walls diverging upwardly from a meeting line in said center plane at angles thereto equal to said predetermined angles, said assembly further comprising screw means disposed in said central plane engaged in said body member and entering said opening opposite to said meeting line for releasably clamping such drill in a position wedged between said walls of said opening, said body member being receivable into said recess with said rear face in contact with said planar face of said trough member and said body member being rockable with, and about the axis of, a drill clamped therein by said screw means and with said forward and rearward portions of said drill seated in said groove, said body member including laterally outwardly extending positioning tabs having outwardly and downwardly facing respective divergent surfaces for meeting said respective shoulders, each said surface being parallel to the respective said wall of said opening on the same side of said plane, said trough member being disposed with the bottom of said groove offset to the right, viewed from a position rearwardly of said rearward end of said trough member, by substantially one-eighth of an inch from said vertical axis of said pin, and means for mounting said trough member on said hub member with said groove disposed at an angle of substantially 59 degrees to the vertical.

4,142,333

GENERATING METHOD FOR GRINDING CYLINDRICAL GEARS

Daniel A. Fivian, Horgen, Switzerland, assignor to Maag Gear-Wheel & Machine Company Limited, Zurich, Sweden

Filed Aug. 29, 1977, Ser. No. 828,500
Claims priority, application Fed. Rep. of Germany, Sep. 15, 1976, 2641554
Int. Cl.[2] B24B *1/00*
U.S. Cl. 51—287 **3 Claims**

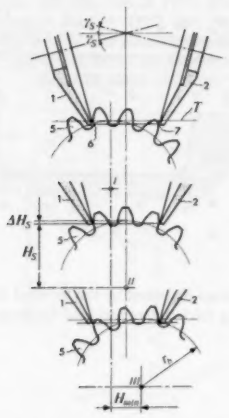
1. A generating method for grinding cylindrical gears by means of point generating grinding, comprising the steps of:

providing a gear having teeth which are to be ground, each tooth having a right tooth flank and a left tooth flank;

grinding a right tooth flank and a left tooth flank by means of two substantially plate-shaped grinding wheels by means of practically point-like contact zones dispositioned at a respective lateral edge thereof; p1 carrying out a to-and-fro generating movement between the gear and both grinding wheels and related to the base cylinder of the gear;

maintaining a connection line between the contact zones of the grinding wheels at a spacing from the base cylinder

such that in each terminal position of the generating movement one grinding wheel machines a tooth tip and at



the same time the other grinding wheel machines a tooth root.

4,142,334

SCOURING AND CLEANING CLOTH

Wilhelm Kirsch, Birkenau; Bohuslav Tecl, and Erich Fahrbach, both of Weinheim, Bergstr., all of Fed. Rep. of Germany, assignors to Firma Carl Freudenberg, Weinheim, Bergstr., Fed. Rep. of Germany

Filed Jun. 8, 1977, Ser. No. 804,835

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1976, 7619792 [U]

Int. Cl.[2] B24D *11/00*

U.S. Cl. 51—395 **8 Claims**

1. A scouring and cleaning cloth comprising a consolidated non-woven fabric composed of one of natural or synthetic fibers and having a coating of a solidified binding agent on at least a portion of each surface in an open pattern applied by a printing process, said pattern comprising superelevated bars so disposed with respect to one another to avoid a straight passage therethrough, the bars in at least one of the surfaces having embedded therein at least one of an abrasive and a soap additive, the non-woven fabric having a thickness sufficient to permit the printed surface portions to be pressed into the cloth to conform to a planar surface.

4,142,335

BUILDING CONSTRUCTION

Harold H. Andrade, Box 942, Grand Cayman, Cayman Islands

Filed Feb. 16, 1977, Ser. No. 769,186

Int. Cl.[2] E04B *7/02*

U.S. Cl. 52—90 **9 Claims**

1. A building construction comprising a reinforced concrete foundation and slab providing a top building support surface,

a self-supporting skeletal building frame including outside wall and roof structure fixed to said slab on said support surface and having a predetermined length and width, and including

a plurality of vertically extending exterior side wall studs spaced about the periphery of said slab, said studs being formed of a light gauge sheet metal material to define aligned confronting channel openings along the heights of each adjacent pair thereof, each of said studs having a lower end fixed to the slab and an upper end fixed to said roof structure,

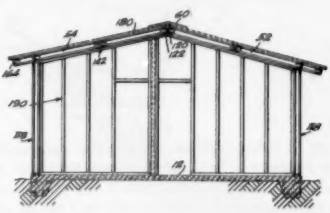
a plurality of roof rafters fixed in a spaced apart spanning relation to said skeletal frame width along said frame length and being formed of a light gauge sheet metal material to define aligned confronting channel openings along the lengths of each adjacent pair thereof,

a plurality of spaced apart purlins fixed in a spanning relation between each adjacent pair of said roof rafters and being formed of a light gauge sheet metal material to define confronting channel openings along the lengths of each adjacent pair thereof;

said exterior studs include a corner stud at each corner of said wall assembly and at least one intermediate stud between each non-adjacent pair of said corner studs;

each of said intermediate studs being fabricated of a pair of alike sheet metal channel members, each channel member including a back web and a pair of outwardly extending side flanges, said pair of channel members being fixed together as by welding in a back-to-back relation to define a pair of oppositely opening channels;

each of said corner studs comprising a pair of alike back-to-



back oppositely opening sheet metal channels, similar to said intermediate studs, and including a third alike channel member fixed thereto as by welding in a position to define a third channel opening substantially at 90 degrees to both of said pair of oppositely opening channels;

said building construction including an anchor plate fixed across the bottom end of each of said exterior studs, said anchor plate including through holes for engagement by conventional anchor bolts, preset in said concrete slab;

said building construction including an attachment plate fixed across the top end of each of said exterior studs, said attachment plate including through holes to provide for bolted engagement to said roof assembly;

said plurality of roof rafters comprising a pair of end rafters fixed respectively to opposed ends of said side wall assembly and at least one intermediate rafter therebetween, fixed to said wall assembly;

each of said end and intermediate rafters being fabricated of a pair of alike sheet metal channel members, each being comprised of a vertical back web and upper and lower side flanges, said pair of channel members being fixed together as by welding in a back-to-back relation to define a pair of oppositely outwardly opening channels;

said end and intermediate rafters each being formed of a pair of rafter lengths, angulated relative to each other to define a gable roof configuration with a central ridge line, each of said rafter lengths sloping downwardly and outwardly from said central ridge line to outer extended ends;

each of said rafter lengths including confronting ends along said central ridge line and including attachment plates,

fixed to both of said confronting ends, with aligned through holes to provide for bolted together engagement of said pair of rafter lengths;

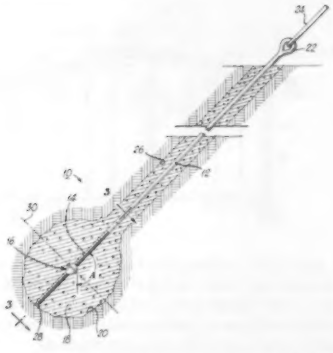
said plurality of purlins including a first plurality of aligned purlins fixed respectively between each adjacent pair of each rafter length adjacent said ridge line, a second plurality of aligned outer purlins, fixed respectively between each adjacent pair of each rafter length somewhat inwardly of said outer extended ends, and a third plurality of aligned intermediate purlins, fixed respectively between each adjacent pair of each rafter length between said first and second purlins;

each of said first plurality of purlins comprising an outwardly opening sheet metal channel member of a length to span the distance between said extending side flanges of said confronting channel openings of an adjacent pair of said roof rafter lengths, and including a generally angle shaped cleat fixed between each end of said first purlin and the respective rafters of said adjacent pair, each of said cleats including a stepped portion to provide a clearance for one of said confronting ends attachment plates.

4,142,336
EARTH ANCHOR

Carlton E. Gebhart, La Grange Park, Ill., assignor to Joslyn Mfg. and Supply Co., Chicago, Ill.

Filed Sep. 19, 1977, Ser. No. 834,174
Int. Cl.[2] E02D *5/74*
U.S. Cl. 52—166 **24 Claims**



1. An earth anchor for anchoring a structure to the earth via a grout ball comprising, an elongated shank having an upper portion and a lower portion, said lower portion including means for anchoring said shank to said grout ball while maintaining relatively straight compressive stress trajectories within said grout ball, said anchoring means including an enlarged section affixed to the lower portion of said shank and means for maintaining said enlarged section spaced substantially away from the periphery of the grout ball, said enlarged section having a continuous nonplanar load bearing surface configured to reduce the undesirable tensile stresses applied to the grout ball.

4,142,337
HYDROTHERAPY SPA AND METHOD OF FABRICATING SAME

Ben W. Holcomb, 3871 Bartley Dr., Sacramento, Calif. 95822

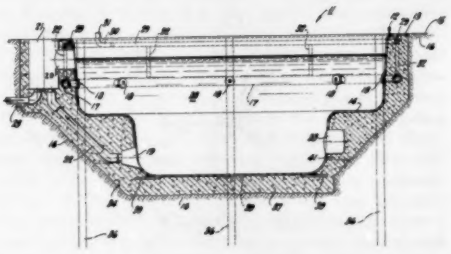
Filed May 31, 1977, Ser. No. 801,476
Int. Cl.[2] E04H *3/18*
U.S. Cl. 52—169.7 **6 Claims**

1. A spa comprising:

a. a shell formed with a horizontal portion;

b. at least three ground engaging stakes supporting the horizontal portion of said shell;

c. a plurality of laterally projecting anchors mounted on the bottom of said shell; and,

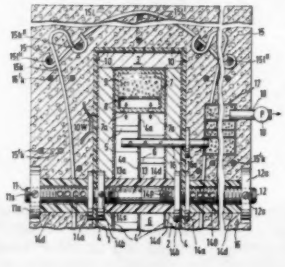


d. a concrete mass disposed in the ground below said shell and enclosing said stakes and said anchors.

4,142,338
CONSTRUCTION UNIT

Otto A. Becker, Robert-Koch-Strasse 59, 66 Saarbruecken, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 701,180, Jun. 30, 1976, Pat. No. 4,071,992. This application Nov. 24, 1976, Ser. No. 744,769
Claims priority, application Fed. Rep. of Germany, Nov. 24, 1975, 2552586
Int. Cl.[2] E04C *2/36*
U.S. Cl. 52—173 R **17 Claims**



1. A composite wall element comprising:

(a) a vapor-tight insulating inner wall element, and supporting means within said inner wall element for providing said inner wall element with load bearing characteristics,

(b) an outer wall element of cast material enclosing at least part of said inner wall element, and

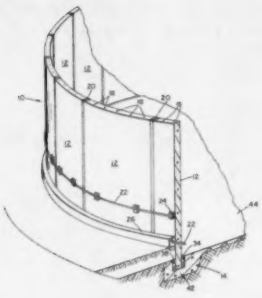
(c) a plurality of reinforcing means embedded in said cast outer wall element substantially entirely around said inner wall element, at least certain of said reinforcing means being bent and engaging other reinforcing means at at least two contact points spaced substantially from each other in such a manner as to prestress in tension said certain reinforcing means in said cast outer wall element, thereby to provide a composite wall element having increased load-bearing capacity substantially entirely around said inner wall element.

4,142,339

CONCRETE TANK JOINT

Francis X. Crowley, 24 Lanark Rd., Wellesley, Mass. 02181

Division of Ser. No. 765,356, Feb. 3, 1977, Pat. No. 4,078,354.
This application Jun. 29, 1977, Ser. No. 811,164
The portion of the term of this patent subsequent to Mar. 14, 1995, has been disclaimed.
Int. Cl.[2] E04H *7/20*
U.S. Cl. 52—224 **8 Claims**



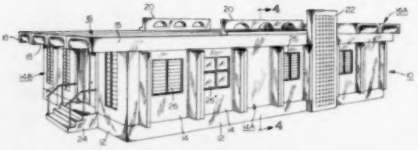
1. A joint for connecting the prestressed wall and the base of a prestressed concrete tank comprising:
   a portion of said base having a groove therein formed about the center line of said base,
   a portion of said wall positioned in said groove, said wall being thinner than the width of said groove, so that a groove portion remains on either side of said wall,
   a first concrete plug positioned in the groove portion that is closer to said center line,
   a second concrete plug positioned in the groove portion that is farther from said center line,
   said first plug being locked into permanent compression by said second plug,
   said second plug being under compression when said tank has liquid therein.

4,142,340

BUILDING ENCLOSURE MADE FROM STANDARD CONSTRUCTION UNIT IN SIDE WALLS AND ROOF DECK

Milton L. Howard, 21 Banbury La., Bloomfield, Conn. 06002

Filed Jul. 11, 1977, Ser. No. 814,449
Int. Cl.[2] E04B *1/00*
U.S. Cl. 52—262 **9 Claims**



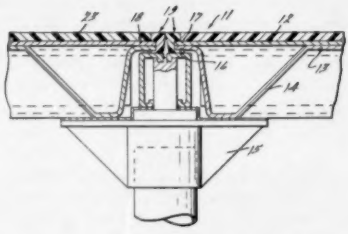
1. A building enclosure having a multiplicity of side walls and a roof deck extending therebetween and comprising:
   a. a multiplicity of standard construction units comprising a precast concrete monolithic panel of substantially rectangular configuration having a generally U-shaped transverse cross section defined by one face having a pair of flanges longitudinally extending along the sides thereof with the surface of said one face being substantially planar therebetween and by the other face thereof being substantially planar, each of said units having at least a plurality of longitudinally spaced-apart side connector elements along each side of said other face of said units;
   b. a footing providing a support surface;
   c. a multiplicity of said standard construction units being vertically disposed upon said footing to provide each of said side walls, said construction units having their side edges abutting and at least one of said side connector elements thereof horizontally aligned with a side connector element of the adjacent unit, and a multiplicity of said standard units having horizontally disposed upon the upper ends of said side walls and extending therebetween to provide said roof deck with said sides thereof in abutting relationship; and
   d. side fastener means bridging the adjacent sides of adjacent construction units in both said side walls and said roof deck, said fastener means being engaged with said connector elements of adjacent construction units.

4,142,341

PANEL CONSTRUCTION FOR ELEVATED FLOOR SYSTEMS

George C. Mott, Redford, Mich., assignor to Mult-A-Frame Corporation, Pontiac, Mich.

Filed Jan. 16, 1978, Ser. No. 869,632
Int. Cl.[2] E04F *15/024*
U.S. Cl. 52—263 **3 Claims**



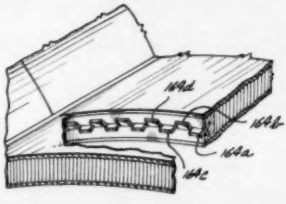
1. The combination, with an access floor panel of the type having a rigid marginal panel flange, and a channel shaped edge strip mounted on said flange, of interfitting rigid longitudinal serrations on the opposite inwardly facing surfaces of the edge strip and the outwardly facing upper and lower surfaces of the rigid marginal panel flange, said interfitting serrations being such that longitudinal inward projections on said edge strip will be received by longitudinal outwardly facing complementary recesses on said marginal panel flange.

4,142,342

JOINT AND METHOD FOR CONNECTING STRUCTURAL MEMBERS

James W. Jungers, Arlington, and Edwin R. Hoyt, Everett, both of Wash., assignors to Pioneer Manufacturing, Inc., Arlington, Wash.

Division of Ser. No. 682,566, May 3, 1976, Pat. No. 4,052,832.
This application Jun. 24, 1977, Ser. No. 809,912
Int. Cl.[2] E04C *2/40*
U.S. Cl. 52—585 **3 Claims**



1. In combination, first and second structural members

adapted to be joined and connected together along predetermined, longitudinally extending surface portions thereof, each said member having a pair of connector receiving slots that extend both longitudinally along the respective said surface and inwardly thereof to define in a transverse section therethrough a V-shape in which the apex of the V lies generally at said surface and the legs of the V diverge inwardly therefrom, said members when arranged with said surfaces abutting and with said V-shaped slots in mutually opposed registration defining a composite slot configuration that in transverse section is cross-shaped, an elongate connector means having a transverse section that is generally the compliment of said cross-shaped section of said composite slot configuration and that is insertable into said slots so that legs of said connector means transversely interlock with the slots of said members to thereby connect said members against relative displacement in the transverse plane; and

said slots in said members having a longitudinal extent that is curved, and wherein said connector is deformable in a plane that includes its lengthwise dimension so that upon its insertion into said slots said connector conforms in its longitudinal extent to the curvature of said slots; and

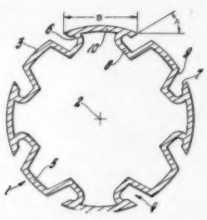
wherein said connector comprises a plurality of longitudinally disjointed segments, each segment being of substantially flat, rectangular shape, and said segments being arranged in an end-to-end, nonoverlapping, criss-crossed pattern that, in projection along the length of the joint, conforms to said cross-shape of said composite slot configuration and that, in said plane that includes said lengthwise dimension of said connector, conforms in a stepwise manner to the curvature of said slots.

4,142,343

POST APPARATUS AND METHODS OF CONSTRUCTING AND UTILIZING SAME

Ronald H. Trafton, 527 Berry Patch La., Pontiac, Mich. 48054

Filed Sep. 20, 1977, Ser. No. 835,008
Int. Cl.[2] E04C *3/32*
U.S. Cl. 52—721 **8 Claims**



1. A post apparatus comprising:

an elongated support member having a major longitudinal central axis and an outer periphery which includes at least one groove therein;

said elongated support member having a tubular configuration which has a substantially constant wall thickness;

said groove being disposed substantially parallel to said major longitudinal central axis of said elongated support member;

said groove having an arcuate side wall portion and a substantially flat side wall portion;

said substantially flat side wall portion of said groove being disposed in a flat plane which is oriented askew with respect to said major longitudinal central axis of said elongated support member;

said groove including a flat base portion which is disposed in a flat plane that is oriented substantially perpendicular to a radius emanating from said major longitudinal central axis of said elongated support member; and

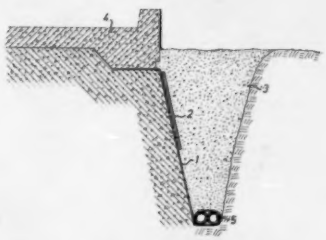
none of said side wall portions of said groove of said elongated support member is disposed perpendicular to said flat plane within which said flat base portion of said groove is disposed.

4,142,344

METHOD OF PROVIDING A MOISTURE-PROOF OR MOISTURE-RESISTANT FOUNDATION INSULATION FOR BUILDINGS

Tore G. Palmaer, Smultronvägen 28, S-331 00 Varnamo, Sweden

Filed Feb. 23, 1977, Ser. No. 771,378
Claims priority, application Sweden, Feb. 27, 1976, 7602890
Int. Cl.[2] E04G *23/00*; E04B *1/35*
U.S. Cl. 52—742 **2 Claims**



1. A method of moisture-proofing the lowermost floor of a building, comprising forming a relatively narrow ditch around and externally of the building and extending below the footing of said building, providing a water-proof rollable thermally insulating membrane having reinforcement means along its surface coextensive with the length of the building on the wall of said ditch closest to the building, attaching one longitudinal edge of said membrane to said building beneath the footing thereof and extending said membrane from the point of attachment with the building downwardly into the bottom of the ditch to cover said bottom, providing tile drainage material in the ditch on top of said membrane to cover the opposite longitudinal edge of said membrane and backfilling the ditch so as to create a region underlying the said lowermost floor and coextensive therewith substantially to the depth of said ditch which is insulated against the penetration of moisture.

4,142,345

NESTABLE CONTAINER PACKAGING APPARATUS

Harold Porter, Jr., Setauket, N.Y., assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Aug. 1, 1977, Ser. No. 821,013
Int. Cl.[2] B65B *57/20, 35/44*
U.S. Cl. 53—54 **18 Claims**

1. A cup-nesting apparatus comprising a series of directionally aligned conveyors including first, second and third conveyors, said conveyors being of the twin belt type with adjacent ends interjoined with one another such that at least one pair of belt ends is disposed inside the adjoining ends of a downstream conveyor, a vertical offset between adjacent ends of said first and second conveyors and means for driving said conveyors at different speeds relative to one another, said driving means including shiftable transmission assemblies having output speed ratios such that during at least a portion of a cycle the relative travel speed of said first conveyor is greater than that of said second conveyor, and the relative speed of said second conveyor is greater than said third conveyor so as

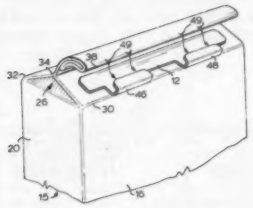
to loosely nest a plurality of cups on said second conveyor and more tightly nest said cups on said third conveyor.

4,142,346

APPARATUS AND METHOD FOR APPLYING CLOSURES TO BAGS AND THE LIKE

Joseph T. De Biasi, Mississauga, Canada, assignor to Professional Packaging Limited, Mississauga, Canada

Filed Sep. 17, 1975, Ser. No. 613,999
Int. Cl.[2] B65B *51/04*
U.S. Cl. 53—416 4 Claims



1. The method of applying formed closures to bags and like containers; where each such bag has a bottom, a shuttable and reclosable mouth at its top, side panels and front and back panels, at least said side and front and back panels being pliable; where each bag has at least one fold in said front and back panels at the top thereof; and where each formed closure comprises a main panel portion that is applied to said front panel of a bag and at least one tab portion which presents a hook-like pre-formed open jaw into which the top of the bag, when shut is inserted; comprising the steps of:

(a) feeding a plurality of bags, seriatim, past at least one station for folding together the top ends of said front, back and side panels thereof, towards a second closure-applying station in a position downstream of said at least one station with respect to the direction of feeding of said plurality of bags;

(b) simultaneously feeding a strip of thermoplastic material in a path which leads to said second closure-applying station; and at positions upstream of said second closure-applying station with respect to the direction of feeding of said strip thermoplastic material performing the steps of:

(i) forming a longitudinal crease in at least a portion of said strip material;

(ii) folding said portion at said crease to form a jaw opening;

(iii) cutting individual formed closures, seriatim, from said formed strip material and feeding said individual formed closures one at a time to said second closure-applying station; and thereafter performing the steps of:

(c) applying the at least one open jaw of said formed closure over the folded top end of a bag;

(d) applying adhesive to the surface of the main panel portion of said formed closure which faces said front panel of the bag on which said formed closure has been placed; and

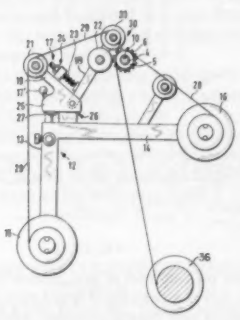
(e) folding the top end of said bag with said formed closure towards said front panel of said bag, and temporarily applying pressure against said formed closure and bag.

4,142,347

APPARATUS FOR MOUNTING ELECTRICAL COMPONENTS HAVING TWO ALIGNED CONNECTION WIRES ON A BELT

Thomas Weresch, Greschbachstrasse 19,, D-7500 Karlsruhe 41, Fed. Rep. of Germany

Filed Apr. 12, 1977, Ser. No. 786,773
Claims priority, application Fed. Rep. of Germany, Apr. 27, 1976, 2618383
Int. Cl.[2] B65B *27/10*
U.S. Cl. 53—591 13 Claims



1. An apparatus for applying electrical components having two aligned connection wires between a plurality of pairs of adhesive bands between a respective pair of which a respective connection wire is located to form a belt having components arranged in spaced disposition longitudinally thereof, each of the adhesive bands being wound on supply bobbins, a respective pair of supply bobbins being provided for each of said pairs of adhesive bands, such apparatus comprising two sets of at least two separate toothed transport wheels arranged next to one another to receive the electrical components in tooth gaps therein, a roller adjacent one of said transport wheels of each set to support a respective adhesive band, and a pressing device for applying a second adhesive band to each first mentioned band in superimposed disposition thereon, characterised in the provision of means mounting the toothed transport wheels and the rollers in an axially adjustable manner on a first common shaft, said first shaft being supported at each end by a respective supporting member, means fixing each respective pair of supply bobbins for the adhesive bands which are to be superimposed on a respective carrier and means for mounting the carriers between said supporting members on a second common shaft in an adjustable manner with respect to one another in their axial direction, said second common shaft being supported at its ends by said supporting members, and said first shaft being mounted independent of said common carriers.

4,142,348

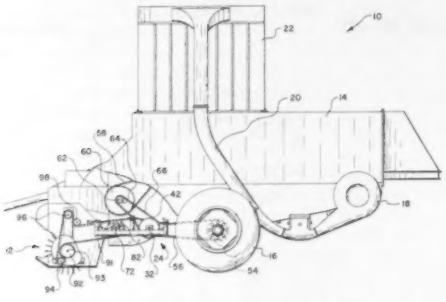
SPEED CONTROL UNIT FOR DRIVING THE PICK-UP REEL OF A PEANUT COMBINE

Bertram L. Jordan, and John D. Mitchell, both of Lewiston, N.C., assignors to Harrington Manufacturing Company, Lewiston, N.C.

Filed Jun. 6, 1977, Ser. No. 803,522
Int. Cl.[2] A01D *89/00*
U.S. Cl. 56—10.2 14 Claims

1. In a peanut combine having a pick-up reel for picking up and transferring peanut crop material into said peanut combine, the improvement comprising a speed control unit for driving the pick-up reel at a first peripheral speed generally corresponding to the ground speed of said peanut combine during harvesting except where the ground speed is less than a selected speed in which case the speed control unit is adapted to drive the pick-up reel at a generally constant second periph-

eral speed, said speed control unit for said peanut combine comprising: first input drive means responsive to the ground speed of said peanut combine for driving said speed control unit at a first speed proportional to the ground speed of said peanut combine during the harvesting operation; second input drive means for driving said speed control unit at a generally constant second speed; and control means responsive to both said first and second input drive means and operatively connected to said pick-up reel of said peanut combine for driving said pick-up reel at a peripheral speed approximately equal the ground speed of said peanut combine when said peanut combine's ground speed is generally equal to or greater than a selected speed, said control means being further operative to drive said pick-up reel at a generally constant peripheral speed independently of the ground speed of said peanut combine when the ground speed of said peanut combine is less than said selected speed.



4,142,349

DISK TYPE MOWER

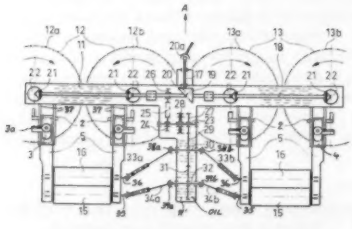
Ludger Hellkuhl, and Martin Maier, both of Gottmadingen, Fed. Rep. of Germany, assignors to Maschinenfabrik Fahr Aktiengesellschaft Gottmadingen, Gottmadingen, Fed. Rep. of Germany

Filed Feb. 23, 1977, Ser. No. 771,310

Claims priority, application Fed. Rep. of Germany, Feb. 25, 1976, 2607666

Int. Cl.[2] A01D *49/00*

U.S. Cl. 56—14.4 **9 Claims**



1. A mower comprising:

a wheel frame adapted to be towed by a tractor, said frame being generally transverse to the direction of travel;

two pairs of cutting disks mounted in a row on said frame for counterrotation about generally vertical axes to mow a crop to be harvested, said frame having a rearward extension lying between said pairs of cutting disks;

drive means on said frame operatively coupled with said cutting disks;

two supports on said frame each extending rearwardly of a respective pair of cutting disks;

a pair of coacting horizontal conditioning rollers on each of said supports disposed in the wake of the respective pair of cutting disks for gathering and pressing the freshly mown crop; and

transmission means operatively connecting said rollers with said drive means, said transmission means including two ancillary shafts on said extension each linked via two universally jointed shafts with two of said rollers respectively carried on said supports.

4,142,350

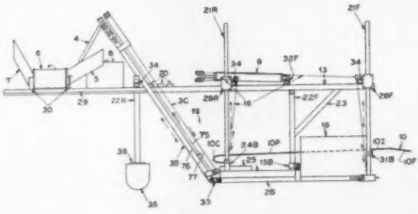
TOBACCO COMBINE STALK GUIDES

Henry J. Griner; Wade Griner; Claude Hyars, and Tommy Sweat, all of Patterson, Ga., assignors to G S & H Equipment Corporation, Patterson, Ga.

Continuation-in-part of Ser. No. 503,676, Sep. 6, 1974, Pat. No. 4,035,998. This application Jul. 15, 1977, Ser. No. 816,124

Int. Cl.[2] A01D *45/16*

U.S. Cl. 56—27.5 **1 Claim**



1. In a tobacco combine having a defoliation assembly mounted for vertical adjustment relative to tobacco stalks, said defoliation assembly including a pair of contrarotating tobacco leaf defoliator blades, an upper stalk guide and a lower stalk guide the improvement in said upper guide which comprises said upper guide being adapted to lift the not-to-be-defoliated leaves above the action area of said defoliator blades and being constituted by

a pair of spaced apart rod-like members, said rod members having

(1) diverged forward end portions (10F) which converge upwardly and rearwardly toward one another, respectively, forward of said blades, and project downwardly at the most forward ends to thereby engage and lift said not-to-be-defoliated leaves,

(2) intermediate portions which converge gradually rearwardly (10I) to downwardly and rearwardly sloping parallel portions (10P), which maintain the not-to-be-defoliated leaves above said pair of contra-rotating blades, and

(3) rear end portions (10C) for securing the rear ends of said spaced rod-like members in fixed position relative to said defoliator blades.

4,142,351

MOWER DISCHARGE BOOT

George G. Neice, Richmond, Va., and Joseph A. Brown, Clinton, N.C., assignors to Vann Industries, Inc., Clinton, N.C.

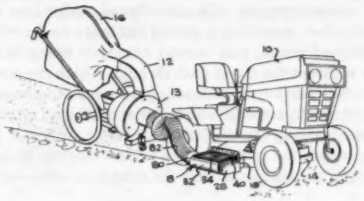
Filed Mar. 3, 1977, Ser. No. 774,046

Int. Cl.[2] A01D *35/22*

U.S. Cl. 56—202 **15 Claims**

1. A mower discharge boot coupling for enabling the connection of a clipping receiving means to a selected one of a plurality of power mower discharge chutes each being of differing dimensions, said coupling comprising a housing defining an outfeed chamber, said housing including a receptor wall formed of relatively flexible material capable of being manually cut along desired portions to define an opening in which the discharge chute of a selected mower can be received to effect discharge of clippings into said outfeed chamber upon operation of said selected mower and outfeed conduit means

having an upstream end communicating with said outfeed chamber and having an opposite discharge end communicating



with said clipping receiving means so as to permit delivery of clippings to said clipping receiving means.

4,142,352

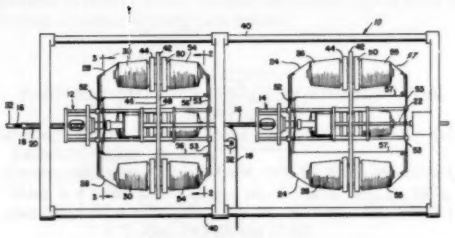
MULTI-WRAP HOSE REINFORCEMENT

John Greczin, 7312 School La., Philadelphia, Pa. 19126

Continuation of Ser. No. 665,254, Mar. 9, 1976, abandoned. This application Aug. 1, 1977, Ser. No. 820,691

Int. Cl.[2] D02G 3/38

U.S. Cl. 57—15 **9 Claims**



1. A circular wrapping machine of the type comprising a hose inlet end, a wrapped hose outlet end, a wrapping head at the outlet end suitable to apply a reinforcement layer about a flexible hose, comprising in combination

a stationary frame;

a bobbin table rotatable within the frame,

said bobbin table comprising first and second bobbin carrying surfaces,

said second bobbin carrying surface being closer to the wrapping head than the first surface,

said bobbin table being provided with a plurality of openings;

a plurality of first and second bobbin mounting means being secured respectively to the first and second bobbin carrying surfaces to feed a plurality of first and second yarns from spools mounted on the bobbin mounting means to the reinforcement layer,

one of said openings being positioned adjacent to each of said first bobbin mounting means whereby first yarns from spools mounted on the first bobbin mounting means will pass longitudinally through the openings toward the wrapping head;

a first yarn guide positioned in spaced relationship from the first bobbin carrying surface,

said first yarn guide being adapted to receive first yarns from first spools on the first bobbin mounting means and to guide the first yarns first away from and then toward the said bobbin table openings,

said first yarn guide being positioned closer to the machine hose inlet than the first spools; and

a second yarn guide positioned in spaced relationship from the second bobbin carrying surface,

said second yarn guide being adapted to receive second yarns from second spools on the second bobbin mounting means and to guide the second yarns toward the said wrapping head,

said second yarn guide being positioned closer to the wrapping head than the second spools; and

whereby the first yarns feed first in a direction away from the wrapping head and thence toward the wrapping head and the second yarns feed in a direction toward the wrapping head.

7. The method of applying a reinforcement layer about a flexible hose as it travels through a wrapping head comprising the steps of

(A) feeding the flexible hose through a bobbin table having an inlet side and an outlet side;

(B) affixing at least one yarn carrying spool to the inlet side of the bobbin table and feeding a first yarn first in a direction away from the wrapping head and then in a direction towards the wrapping head;

(C) affixing at least one yarn carrying spool to the outlet side of the bobbin table and feeding a second yarn always in a direction toward the wrapping head;

(D) feeding the first of the yarns through an opening in the bobbin table when feeding toward the wrapping head; and

(E) applying both of said yarns about the flexible hose in a reinforcement layer at the wrapping head.

4,142,353

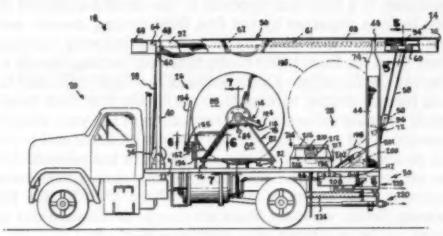
METHOD AND APPARATUS FOR RIGGING MARINE VESSELS

Wayne M. Bruce, 29 Little River Rd., South Dartmouth, Mass. 02748, and Walter J. Bruce, 109 Oakland St., New Bedford, Mass. 01730

Filed Jun. 28, 1978, Ser. No. 920,125

Int. Cl.[2] B65H 69/06

U.S. Cl. 57—22 **8 Claims**

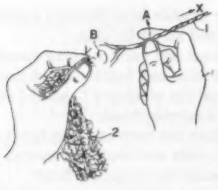


1. A marine rigging apparatus for splicing new wire cable of the type having twisted wire strands to a portion of worn wire cable taken from a rotatable drum on a fishing vessel docked or moored adjacent a dock, said apparatus comprising a base, a bearing mounted on said base, at least one drum rotatably supported by said bearing, power means operatively connected to said drum for rotating said drum to wind said worn cable onto said drum, clamping means mounted on said base for restraining portions of cables to be spliced with the cables being restrained against rotation about the axes of the cables, and twister means mounted on said base for rotating a first of said cables in a direction opposed to the natural twist of said first cable to relieve the tension in the strands of said first cable at a desired location on the cable to permit an efficient and quick splicing of a second of said cables to said first cable, said twister means including a twister bearing mounted on said base, means rotatably supported by said bearing for gripping said first cable and means for rotating said gripping means relative to said clamping means to untwist a portion of said first cable held between the clamping means and the gripping means, said twister bearing including a fixed split sleeve having one portion thereof attached to said base and said cable gripping means including a rotatable split sleeve journaled within said fixed split sleeve, means for opening and closing said rotatable split sleeve, and a vise mounted on said rotatable split sleeve thereby permitting the insertion of a cable through the rotatable sleeve and clamping of the cable by the vise.

4,142,354
DIRECT SPINNING APPARATUS

Teiju Nakahara, Ujishi, Japan, assignor to Murata Kikai Kabushiki Kaisha, Japan

Filed Sep. 21, 1977, Ser. No. 835,339
Claims priority, application Japan, Mar. 24, 1977, 52-32968
Int. Cl.[2] D01H *7/90, 1/12*
U.S. Cl. 57—328 **6 Claims**



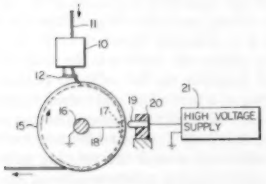
1. A direct spinning apparatus comprising a drafting means including a front roller, a first fluid turning nozzle having a cylindrical yarn passage perforated therethrough and throttled hole portions having a size smaller than that of the yarn passage on yarn inlet and outlet sides thereof, a false twisting device for rotating a yarn in a direction opposite to the turning direction of a yarn balloon imparted by the first fluid turning nozzle, and a take-up means.

6. A direct spinning method for producing an actually spun yarn using an apparatus comprising a drafting means including a front roller, a first fluid turning nozzle having a cylindrical yarn passage perforated therethrough and throttled hole portions having a size smaller than that of the yarn passage on yarn inlet and outlet sides thereof, a false twisting device for rotating a yarn in a direction opposite to the turning direction of a yarn balloon imparted by the first fluid turning nozzle, and a take up means, including the steps of continuously supplying fibers from the front roller to the first fluid turning nozzle and drawing the fibers into a yarn between the front roller and first fluid turning nozzle, turning the yarn by the first fluid turning nozzle to cause ballooning and revolution of the yarn whereby connection between the yarn and fibers is loosened and broken and twists imparted by rotation of the yarn are released from the broken end of the yarn to give the yarn actual twists, imparting false twists to the fibers of the yarn by the false twisting device whereby fibers are caught at the yarn end and taking up the produced spun yarn on a package.

4,142,355
SELF-TWIST YARN NODE FIXATION APPARATUS AND METHOD

Phillip W. Chambley, and Alan H. Norris, both of Rome, Ga., assignors to WWG Industries, Inc., Rome, Ga.

Filed Nov. 18, 1977, Ser. No. 852,818
Int. Cl.[2] H01B *13/04*
U.S. Cl. 57—293 AT **3 Claims**

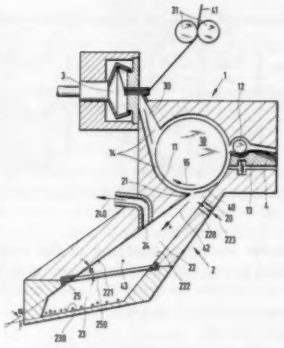


1. A method of locking the nodes of self-twist yarn comprising individually false-twisting a plurality of yarn strands so that the strands have longitudinally separated regions of alternating twist separated by twist reversal nodes, guiding the strands so that portions thereof travel along a path in parallel relationship with adjacent twisted regions thereof having the same direction of twist and with the nodes in substantial longitudinal alignment, providing a first electrode adjacent and on one side of the aligned nodes, said first electrode being moved with said aligned nodes, bringing adjacent aligned nodes into contact with each other, providing a second electrode on the other side of the aligned nodes, said second electrode being in a fixed location adjacent the travel path through which the nodes and the first electrode move, connecting a source of voltage to the two electrodes to establish an electrical discharge arc therebetween, maintaining the discharge arc for a sufficient time to heat and soften the strands at the nodes, thereby locking the nodes together, and permitting the strands to self-twist.

4,142,356
OPEN-END SPINNING APPARATUS

Gerd Hüsges, and Eberhard Grimm, both of Ingolstadt, Fed. Rep. of Germany, assignors to Schubert & Salzer, Ingolstadt, Fed. Rep. of Germany

Filed Oct. 14, 1977, Ser. No. 842,116
Claims priority, application Fed. Rep. of Germany, Oct. 27, 1976, 2648708
Int. Cl.[2] D01H *11/00, 1/12*
U.S. Cl. 57—301 **6 Claims**



1. An open-end spinning apparatus having a fiber conveying path between a fibrous material feed device and a spinning compartment, a trash separating device including a trash-separating aperture communicating with said fiber conveying path through which air is supplied to said fiber conveying path, said aperture being bounded on one side by a dividing edge, and a trash collecting chamber receiving trash removed through said aperture of said trash-separating device, the improvement comprising:

an auxiliary chamber carried between said aperture of said trash-separating device and said trash-collecting chamber, opposed walls forming part of said auxiliary chamber,

a first aperture extending through one of said walls through which a stream of air flows for being introduced into said fiber conveying path,

a second aperture provided in said other wall through which a smaller stream of air is removed from said auxiliary chamber for aiding in removing small particles of said trash from said auxiliary chamber,

a controllable closing member disposed between said auxiliary chamber and said trash collecting chamber,

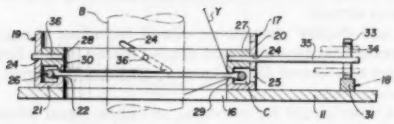
means for selectively opening said closing member for allowing trash separated from said fibrous material to be deposited in said collecting chamber and for selectively closing said closing member sealing said auxiliary chamber from said trash collecting chamber, and

means for cleaning said collecting chamber while said closing member is closed.

4,142,357
YARN GUIDE FOR SPINNING OR TWISTING MACHINE

William B. Poston, Central, S.C., assignor to Sara G. Poston, Central, S.C.

Filed Jan. 17, 1978, Ser. No. 870,107
Int. Cl.[2] D01H 7/56, 7/64
U.S. Cl. 57—122 10 Claims

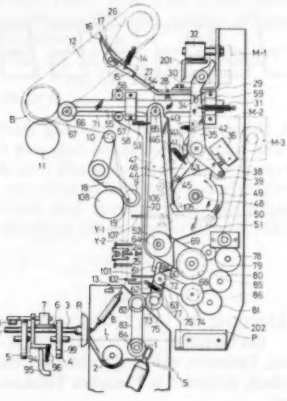


1. In a spinning machine, a ring rail to traverse bobbins during the winding thereof, rotating spindles carrying the bobbins, and yarn guiding devices on the ring rail and surrounding the spindles, each yarn guiding device comprising an outer ring fixed to the top of the ring rail and having a side wall, an inner ring within the outer ring and adapted for vertical adjustment therein and an intermediate floating ring within the outer ring and inner adjustable ring, and adjusting means common to all of the yarn guiding devices on the ring rail and having a connection with each inner adjustable ring and being operable to raise or lower the inner adjustable rings of all of the devices in unison to vary yarn tension.

4,142,358
YARN ENDING UNIT FOR OPEN-END SPINNING MACHINE

Takeshige Honjo, Suitashi, Japan, assignor to Murata Kikai Kabushiki Kaisha, Japan

Continuation of Ser. No. 708,436, Jul. 26, 1976, abandoned, which is a continuation of Ser. No. 507,056, Sep. 18, 1974, abandoned. This application Jul. 25, 1977, Ser. No. 819,031
Int. Cl.[2] D01H 15/00
U.S. Cl. 57—263 4 Claims



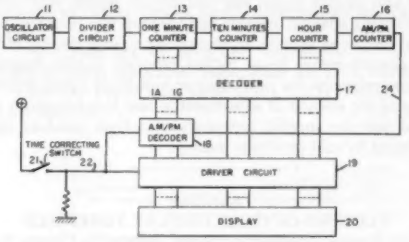
1. An ending unit provided for an open-end fine spinning machine which spinning machine includes a rotor, which ending unit is intended to perform ending by means of the ending unit running in front of the machine, which ending unit further includes a friction roller for driving a package and a friction roller for driving a feed roller, means operably associated with each of the rollers for moving the rollers forward and backward independently, and two variable speed motors, each of which is connected to one of the rollers for driving one of the rollers, wherein said ending unit is provided with a control system operably associated with the variable motors for controlling revolutions of both the variable motors in response to rotations of the rotor in the fine spinning machine and wherein said spinning machine is provided with a hook for holding one end of a yarn string in a bent condition, and said ending unit comprises a solenoid for releasing the yarn string from said hook by kicking the hook, which solenoid is energized by output from said control system.

2. An ending unit provided for an open-end fine spinning machine which spinning machine includes a rotor, which ending unit is intended to perform ending by means of the ending unit running in front of the machine, which ending unit further includes a friction roller for driving a package and a friction roller for driving a feed roller, means operably associated with each of the rollers for moving the rollers forward and backward independently, and two variable speed motors, each of which is connected to one of the rolers for driving one of the rollers, wherein said ending unit is provided with a control system operably associated with the variable motors for controlling revolutions of both the variable motors in response to rotations of the rotor in the fine spinning machine and wherein said spinning machine is provided with a reflector mirror mounted on the rotor or on a rotating disc supporting the rotor of the fine spinning machine, and said unit is provided with a photoelectric device for emitting a beam toward said reflector mirror and receiving the beam reflected by the mirror to control revolutions of said two variable speed motors in response to rotations of the rotor in the fine spinning machine.

4,142,359
ELECTRONIC TIMEPIECE

Yasuo Kusumoto, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Japan

Filed Dec. 20, 1976, Ser. No. 752,440
Claims priority, application Japan, Dec. 19, 1975, 50/151665
Int. Cl.[2] G04C 3/00
U.S. Cl. 58—23 R 6 Claims



1. An electronic timepiece, comprising: an oscillator circuit for generating a repetitive time standard signal; a divider circuit receptive of the repetitive time standard signal for dividing the same and for developing a repetitive output signal having a repetition rate defining a unit of time; a time counter circuit connected to receive the dividing circuit output signal for counting the same and for developing a count representative of time; an AM/PM counter circuit connected to said time counter circuit and responsive to the count developed therein for developing a count indicative of whether the time is AM or PM; display means having a plurality of digit display positions for displaying time; decoder means connected to said time counter circuit for developing decoded output signal groups each for enabling a respective digit display position of said display means to enable said display means to display the time represented by the count developed by said time counter circuit; AM/PM decoder means receptive of one decoded output signal group from said decoder means and receptive of a control signal and connected to receive the count developed by said AM/PM counter circuit for developing the applied decoded output signal group as an output signal and for developing an output signal effective to display a character representative of AM and for developing an output signal effective to

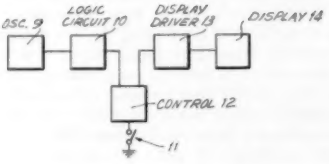
display a character representative of PM according to whether or not the control signal is applied to said AM/PM decoder means and according to whether or not the count developed by said AM/PM counter represents AM or PM; and means for developing said control signal.

4,142,360

ELECTRONIC TIMEPIECE

Yoshikazu Akahane, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Jul. 7, 1977, Ser. No. 813,732
Int. Cl.[2] G04C *3/00*
U.S. Cl. 58—23 R **11 Claims**



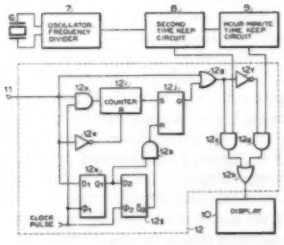
1. In an electronic timepiece including oscillator means for producing a time standard signal having a specific high frequency, divider means including a plurality of series-connected divider stages for producing a low frequency time signal in response to said time standard signal being applied thereto, display means for displaying actual time in response to said low frequency time signal being applied thereto and frequency adjustment means coupled to at least two of said divider stages for adjusting the frequency of said low frequency time signal, the improvement comprising control means disposed intermediate said display means and said divider means, said control means being adapted to apply said adjusted low frequency time signal produced by said divider means to said display means, said control means being further coupled to said frequency adjustment means for producing an indication signal representative of the amount of adjustment to said low frequency time signal and the specific frequency of a time standard signal produced by said oscillator means.

4,142,361

ELECTRO-OPTICAL DISPLAY TIMEPIECE

Satoshi Kimura, Tokorozawa, Japan, assignor to Citizen Watch Co. Ltd., Tokyo, Japan

Filed Sep. 27, 1976, Ser. No. 726,957
Claims priority, application Japan, Sep. 30, 1975, 50-117853
Int. Cl.[2] G04B *19/30*
U.S. Cl. 58—50 R **10 Claims**



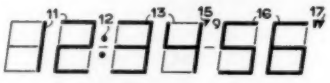
1. An electro-optical display timepiece comprising:
(a) a crystal oscillating element having an output signal;
(b) a frequency divider connected to said crystal oscillating element for dividing the output signal;
(c) a counter circuit including at least a time keep circuit counting an output signal from said divider so as to deliver a time keep signal;
(d) a display means for displaying at least one kind of time information;
(e) a display changeover circuit connected between said counter circuit and said display means for providing signals to said display means;
(f) a switch externally operable and operating said changeover circuit;
(g) said display changeover circuit including changeover means changing over said display means from a first display to a second display in response to an ON signal from said switch;
(h) a timer circuit for providing an output signal when said switch is held ON for more than a predetermined time;
(i) memory means for memorizing existence or non-existence of said output signal from said timer circuit; and
(j) a display circuit for operating said changeover means to send signals to said display means to display said second display while said memory means memorizes said timer signal, whereby the instant when said switch is turned ON, said first display is changed to said second display, and if said ON state is held longer than said predetermined time, then said second display is displayed after said switch is turned OFF, and if said ON state is held shorter than said predetermined time, then said first display is displayed after said switch is turned OFF.

4,142,362

DIGITAL DISPLAY TIMEPIECE

Heihachiro Ebihara; Fukuo Sekiya, both of Tokorozawa, and Takashi Yamada, Sayama, all of Japan, assignors to Citizen Watch Co. Ltd., Tokyo, Japan

Filed Mar. 25, 1977, Ser. No. 781,329
Claims priority, application Japan, Mar. 26, 1976, 51-36560[U]; Mar. 29, 1976, 51-38152[U]
Int. Cl.[2] G04B *19/32*
U.S. Cl. 58—50 R **17 Claims**



1. A digit display timepiece comprising electronic optical display devices, a clock information indicator for displaying units of information, and partition marks provided near each respective unit in the clock information indicator, said partition marks corresponding to a particular unit, flashing when the clock information with regard to the particular unit is corrected.

4,142,363

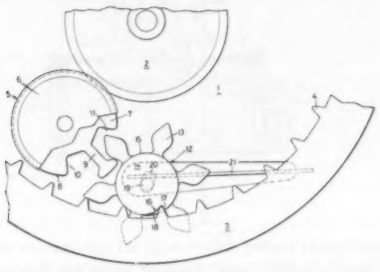
CALENDAR WATCH MOVEMENT WITH DATE-INDICATING MEMBER

Charles Guyot, Tavannes, and Jacques Muller, Reconvilier, both of Switzerland, assignors to Ebauches Tavannes S.A., Berne, Switzerland

Filed Apr. 26, 1977, Ser. No. 791,010
Claims priority, application Switzerland, May 3, 1976, 5530/76
Int. Cl.[2] G04B *19/24*
U.S. Cl. 58—58 **7 Claims**

1. A calendar watch movement comprising a plate, an annular date-indicating member having an inner toothing and mounted coaxially with respect to said plate, an hour wheel disposed at the center of the plate and continuously driven through said movement, a calendar wheel continuously driven by said hour wheel at a speed greater than one revolution every 12 hours, and a double cam arrangement for intermittently driving said date-indicating member one step every 24 hours, and for locking said member between the driving peri-

ods, said arrangement comprising a first and a second cam each of which includes an arcuate sector and a hook element, said first cam being integral with a coaxial star and pivotally mounted on said plate in such a manner that said hook element engages said toothing and drives said date indicator one step each time the first cam has effected a complete revolution, said



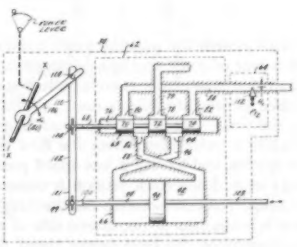
arcuate sector locking said toothing when said hook does not engage said toothing, and said second cam being integral and coaxial with said calendar wheel and arranged in such a manner that said hook element of said second cam engages said star and drives it one step at each complete revolution of the calendar wheel.

4,142,364

BACK-UP CONTROL FOR GAS TURBINE ENGINE

Robert P. Wanger, Fairfield, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Jul. 22, 1977, Ser. No. 818,257
Int. Cl.[2] F02C 9/08
U.S. Cl. 60—39.28 R **8 Claims**



1. In a back-up control associated with a control system for a gas turbine engine having an engine inlet, the improvement comprising:

a fuel control valve for metering the flow of fuel to said engine;

first means for providing a mechanical position signal indicative of the magnitude of a desired fuel flow to said engine, said fuel control valve metering the flow of fuel to said engine in response to said signal; and

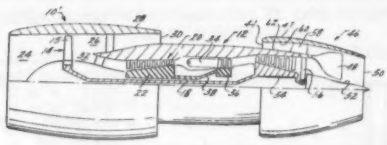
second means for limiting the rate at which a change in said signal is transmitted to said valve said second means operating to limit said transmission rate in response to engine inlet pressure.

4,142,365

HYBRID MIXER FOR A HIGH BYPASS RATIO GAS TURBOFAN ENGINE

Donald F. Sargisson, and Daniel J. Lahti, both of Cincinnati, Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Nov. 1, 1976, Ser. No. 737,786
Int. Cl.[2] F02K 3/06
U.S. Cl. 60—204 **7 Claims**



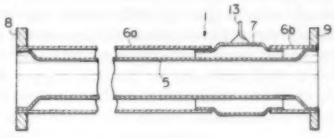
6. In a method of operating a gas turbine engine including a core engine for generating a hot gas stream, a bypass duct generally concentric with the core engine for the passage of a bypass stream, and a shroud termination downsteam of the bypass, the steps of passing only a portion of the bypass stream equivalent to an engine bypass ratio of substantially two through an annulus formed between the shroud immersed in the bypass stream and the core engine, mixing the flow within the shroud with the core engine hot gas stream, and passing the remainder of the bypass flow around the outside of the shroud.

4,142,366

EXHAUST DOUBLE PIPE OF AN INTERNAL COMBUSTION ENGINE

Toshio Tanahashi, and Yasuo Fujioka, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jul. 12, 1976, Ser. No. 704,510
Claims priority, application Japan, May 18, 1976, 51-56025
Int. Cl.[2] F01N 7/08; F16L 21/06, 27/12, 51/02
U.S. Cl. 60—322 **8 Claims**



1. A double-walled exhaust pipe for use with an internal combustion engine of a vehicle comprising:

an inner exhaust pipe having first and second ends,

an outer pipe assembly surrounding said inner pipe, said outer pipe assembly comprising first and second outer pipes, each having inner and outer ends, said inner end of said first outer pipe being coupled to said inner end of said second outer pipe, wherein the coupling between said first and second outer pipes is a tubular spacer fitted into the inner ends of said first and second outer pipes, and allows sliding movement between said outer pipes and said spacer, said spacer having on its central portion an increased diameter portion, and on its opposite ends reduced diameter portions,

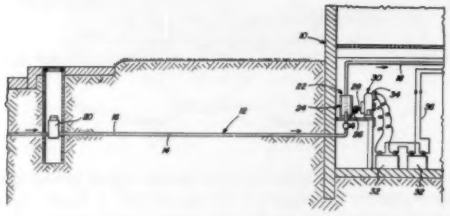
a first mounting flange, said outer end of said first outer pipe being welded to said first mounting flange together with said first end of said inner pipe, and

a second mounting flange, the outer end of said second outer pipe being welded to said second mounting flange together with said second end of said inner pipe.

4,142,367
DOMESTIC WATER PRESSURE-FLOW POWERED GENERATOR SYSTEM

Vito Guisti, Walpole, Mass., assignor to Eleanor A. Guisti Dondero, Norward; Robert E. Guisti, Walpole; George R. Guisti, Walpole; Richard P. Guisti, Walpole and Karlino Guisti, Walpole, all of, Mass., part interest to each

Filed Oct. 17, 1977, Ser. No. 843,072
Int. Cl.[2] F15B *1/00*
U.S. Cl. 60—325 3 Claims



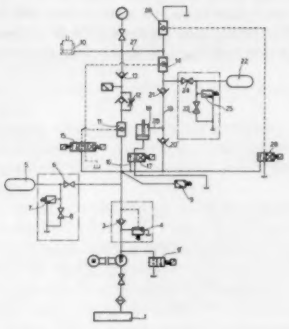
1. In combination with a building including a battery powered auxiliary electrical wiring system and a pressurized domestic water system including a supply pipe having an inlet end portion communicated with a source of water under pressure exteriorly of said building and an outlet end portion connected to various domestic water outlets within said building, a power generating system including a fluid motor having a rotatable output shaft and a fluid inlet and a fluid outlet, said fluid motor being disposed within said building and serially connected in said supply pipe with said inlet communicated with said inlet end portion and said outlet communicated with said outlet end portion, whereby each discharge of water from one of the said various outlets will cause water to flow through said motor and said outlet shaft to be rotated, an electric generator provided with a rotary input shaft, said output shaft being drivingly connected to said input shaft, a bank of storage batteries, said generator including a pair of electrical potential output conductors electrically connected to said bank of batteries for recharging the same, current regulating means, said electrical output conductors being electrically connected to said bank of batteries through said current regulating means, said auxiliary domestic electrical wiring system electrically connected to said bank of storage batteries.

4,142,368
HYDRAULIC SYSTEM FOR SUPPLYING HYDRAULIC FLUID TO A HYDRAULICALLY OPERATED DEVICE ALTERNATELY AT PRESSURES OF DIFFERENT VALUE

Enzo Mantegani, Milan, Italy, assignor to Welko Industriale S.p.A., Milan, Italy

Filed Oct. 12, 1977, Ser. No. 841,726
Claims priority, application Italy, Oct. 28, 1976, 28786 A/76
Int. Cl.[2] F15B *1/02, 3/00*
U.S. Cl. 60—413 5 Claims

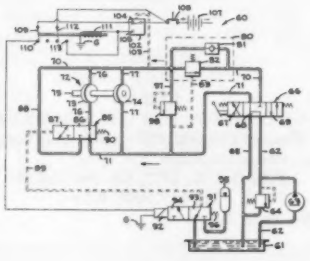
1. A hydraulic system for supplying hydraulic fluid to a hydraulically operated device alternately at pressures of different values, comprising a first hydraulic circuit arranged to be supplied with hydraulic fluid at a low pressure by a pump and for supplying the hydraulic device with fluid at a low pressure through a first pilot operated valve, a second hydraulic circuit provided with a pressure multiplier piston device for producing hydraulic fluid at a pressure greater than that of the low pressure fluid and having a first chamber connected to the first hydraulic circuit and a second chamber of smaller area than the first chamber connected to the second hydraulic circuit, the second hydraulic circuit being provided with a pressure accumulator for maintaining high pressure in the second hydraulic circuit and said second hydraulic circuit being provided with a second pilot operated valve for supplying the hydraulic device with fluid at said high pressure.



4,142,369
MULTIPLE SPEED HOISTING SYSTEM WITH PRESSURE PROTECTION AND LOAD CONTROL

Roger D. Mickelson, Cedar Rapids, Iowa, assignor to FMC Corporation, San Jose, Calif.

Filed May 4, 1976, Ser. No. 683,113
Int. Cl.[2] F01C *11/00;* F15B *13/06*
U.S. Cl. 60—425 5 Claims



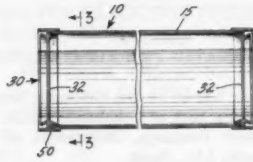
1. A control system for hoisting loads comprising a fluid motor with a pair of rotor sections drivingly connected to a common shaft that is operable at either a low speed or a high speed; a source of pressure fluid; a sump, a fluid circuit interconnecting the fluid source and the fluid motor, said fluid circuit including a valve controlling the flow to and from a single rotor section and having a low speed position wherein the discharge of said one rotor section is connected to sump and a high speed position wherein the discharge of said one rotor section is connected to the source side of said one rotor section for controlling the fluid motor speed, means biasing said valve to the low speed position; and means for shifting the valve from the low speed position to the high speed position, said valve shifting means including a solenoid for maintaining said valve in the high speed position when energized, an operator's switch, and an electrical circuit interconnecting the solenoid and the operator's switch, said operators's switch when closed being effective to energize the solenoid to maintain the valve in the high speed position, a pressure switch within the electrical circuit, said pressure switch being connected to the fluid circuit for sensing the fluid pressure therein near a pressurized side of the fluid motor, said pressure switch being operable in response to a predetermined pressure level within the fluid circuit for breaking the electrical circuit to the solenoid, whereupon the valve biasing means shifts the valve controlling the fluid motor speed to the low speed position.

4,142,370

SNAP-ON END CAP FOR GUTTERS AND PROCESS FOR APPLYING SAME

Louis G. Giordano, 220 E. Arlington Ave., Linwood, N.J. 08221

Filed Dec. 12, 1977, Ser. No. 859,841
Int. Cl.[2] E04D *13/00*
U.S. Cl. 405—119 5 Claims



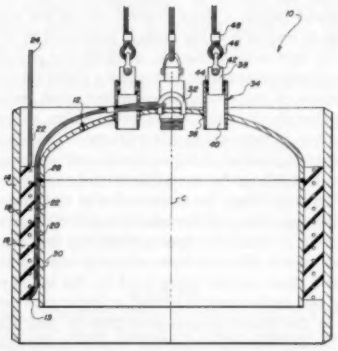
1. A snap-on end cap for open-ended gutters comprising a vertical end wall having substantially the contour of the profile of the gutter to be capped, said end wall having two opposed pairs of flanges projecting substantially normally outwardly therefrom about the periphery thereof, said pairs of flanges forming respectively, in mirror image relationship to each other on opposed sides of said end wall, a left-hand-mating ribbed groove and a right-hand-mating ribbed groove, said grooves corresponding in contour to the profile of said gutter, said end wall and flanges being a unitary resilient molding, whereby said snap-on end cap may with equal facility be applied to cap and seal either the left-hand or the right-hand open end of said gutter.

4,142,371

REMOVABLE CLOSURE APPARATUS FOR HOLLOW COLUMNAR MEMBERS

Windel O. Mayfield, Corsicana; John M. Montague, Dallas, and Clarence T. Thomerson, Corsicana, all of Tex., assignors to Regal Tool & Rubber Co., Inc., Corsicana, Tex.

Filed Aug. 8, 1977, Ser. No. 822,401
Int. Cl.[2] E02B *17/04*
U.S. Cl. 405—224 6 Claims



1. A removable closure apparatus for a hollow open-ended tubular member, comprising:

(a) a body spanning the major portion of the cross sectional area of said member; and

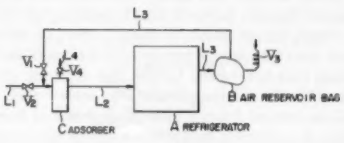
(b) an annular seal of rupturable material securing said body to the inner wall of said tubular member having a tensile bearing multi turn inlay therein coaxial with said member and helically encircling said body and coupled to said body for forming an annular trough in said material which progressively deepens as said inlay is drawn from said seal to destroy the structural integrity of said annular member to permit removal of said plug means from within said tubular member.

4,142,372

CONTROLLED ATMOSPHERE STORAGE METHOD

Kaoru Kato, Hirakata, and Yasuhiko Yamashita, Toyonaka, both of Japan, assignors to Daikin Kogyo Co. Ltd., Osaka, Japan

Filed Oct. 19, 1977, Ser. No. 843,736
Claims priority, application Japan, Oct. 22, 1976, 51-127698
Int. Cl.[2] F24F *3/16;* B01D *53/02*
U.S. Cl. 62—78 4 Claims



1. In a vegetables and fruits-storing method of a controlled atmosphere storage including continuously feeding the air of a definite oxygen content and definite amount obtained by means of an adsorber (C) into an airtight refrigerator (A) to obtain an atmosphere suitable for storage in the refrigerator (A), an improved method wherein the improvement comprises in the first step feeding the open air and the atmosphere of the refrigerator (A) to be recycled in such order or simultaneously into the adsorber (C) packed with an adsorbent such as zeolite or the like which adsorbs more nitrogen than oxygen, adsorbing the nitrogen in the open air and the atmosphere and expelling the high oxygen content air of the adsorber (C) having oxygen content lower than that of the open air but higher than that of desired atmosphere of the refrigerator (A), in the next step expelling a part of the remained high oxygen content air, and in the further next step desorbing the nitrogen and the remained high oxygen content air of the adsorber (C) to obtain the desired oxygen content air and feeding the desired oxygen content air into the refrigerator (A), and repeating the above steps; the recycling of the atmosphere of the refrigerator (A) being carried out in order that the time for expelling said high oxygen content air of the absorber is gradually shortened, while the time for feeding the desired oxygen content air into the refrigerator (A) is gradually lengthened so that the amount of the desired oxygen content air obtained from a definite amount of said open air and said atmosphere can be gradually increased, to rapidly lower the oxygen content in the refrigerator (A) to be the desired oxygen content.

4,142,373

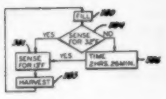
TRAY ICE MAKER

John Weibel, Jr., Dayton; Homer W. Deaton, Bellbrook, and Dale A. Beard, New Carlisle, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 2, 1977, Ser. No. 856,786
Int. Cl.[2] F25C *1/10*
U.S. Cl. 62—138 6 Claims

1. In an ice maker having a compartmented tray defining pockets adapted for exposure to below-freezing temperatures, means for filling the pockets in said tray with an above-freezing temperature liquid adapted to solidify as ice pieces in said pockets when said pockets are exposed to said below-freezing temperatures for a time period sufficient to effect ice pieces at a predetermined temperature, and ice harvesting means associated with said tray for normally removing all of the ice pieces from said pockets but occasionally removing some of said ice pieces while leaving a stuck ice piece remaining in one of said pockets, said one of said pockets comprising a sensing pocket, the invention comprising a circuit for controlling the harvesting means of said ice maker in accordance with the presence or

absence of a stuck ice piece in said sensing pocket, said circuit including bridge means having temperature sensing means in one portion thereof for sensing temperature after fill and first resistor means in another portion thereof, second resistor means selectively connectable in said circuit with said first resistor means, time delay means for said harvest means selectively connectable in said circuit, and logic means for selectively connecting said second resistor means and said time delay means in said circuit in response to said temperature sensing means sensing either in above-freezing temperature or a below-freezing temperature, said temperature sensing means being in heat exchange relation with said sensing pocket for



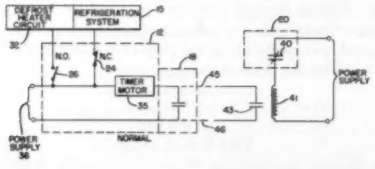
sensing an above-freezing temperature when said sensing pocket has liquid therein and for sensing a below-freezing temperature when said sensing pocket has a stuck ice piece therein, whereby said harvest means is conditioned for immediate harvest after said predetermined temperature is effected in said ice pieces when said temperature sensing means senses an above-freezing temperature after the preceding harvest and subsequent fill, and whereby said harvest means is conditioned for delayed harvest, wherein said time delay means is selected to provide a predetermined fixed time freezing interval that insures said predetermined temperature is effected in said ice pieces if said temperature sensing means senses a below-freezing temperature after the preceding harvest and subsequent fill.

4,142,374

DEMAND DEFROST TIME CLOCK CONTROL CIRCUIT

Roger C. Ansted, and Roger W. Dougan, both of San Antonio, Tex., assignors to Wylain, Inc., Dallas, Tex.

Filed Sep. 16, 1977, Ser. No. 834,134
Int. Cl.[2] F25D *21/06, 21/00*
U.S. Cl. 62—155 **7 Claims**



1. A demand defrost control circuit for a refrigeration system which includes refrigeration means and defrost means for defrosting said refrigeration means, said circuit comprising:

defrost control means, including a defrost control time clock for coordinately controlling the operation of said refrigeration means and said defrost means, said control time clock normally switching between said refrigeration means and said defrost means at regular timed intervals;

auxiliary switching means in circuit with said defrost control means for interrupting the operation of said time clock in the absence of a demand defrost signal at a predetermined time prior to switching to said defrost means, whereupon said defrost means remains substantially inhibited and said refrigeration means remains operative until the presence of a demand defrost signal whereupon said refrigeration means is inhibited; and

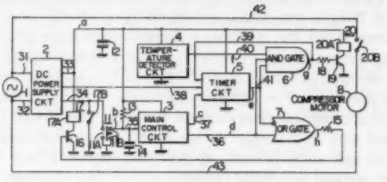
demand defrost means, including means for sensing frost in said refrigeration means, operatively associated with said refrigeration means and said defrost control means for generating the demand defrost signal in response to said frost sensing means, said demand defrost signal activating said time clock to cause the clock to run said predetermined time until said defrost control means is activated by said clock to control the operation of said defrost means and to inhibit said refrigeration means.

4,142,375

CONTROL APPARATUS FOR AIR CONDITIONING UNIT

Yuuhei Abe, Fujisawa; Katsuo Mohri, Yokosuka; Nobuo Azuma; Kazuyoski Kuwahara, both of Yokohama; Yuhiko Yabe, Tochigi, and Yasunori Tominaga, Ohiramachi, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Nov. 28, 1977, Ser. No. 855,326
Claims priority, application Japan, Nov. 29, 1976, 51-142294
Int. Cl.[2] F25B *19/00*
U.S. Cl. 62—158 **9 Claims**



1. A control apparatus for controlling the operation of a compressor motor of an air conditioning unit, comprising a power supply circuit, a manual switch connected to said power supply circuit for turning on and off the current supplied from said power supply circuit to said control apparatus, a temperature detector circuit operated in response to the indoor air temperature, said temperature detector circuit generating a signal for prohibiting the start and restart of said compressor motor when the indoor air temperature is within a predetermined range, said temperature detector circuit generating a signal for permitting the start and restart of said compressor motor when the indoor air temperature is not within said predetermined range, a main control circuit for sequentially generating, in response to the voltage produced by the current supplied by said manual switch, a signal for permitting the operation of said compressor motor and a signal for prohibiting the operation of said compressor motor, said main control circuit further producing a single initial pulse, a timer circuit for generating, in response to selected one of the signals generated by said temperature detector circuit and said main control circuit for prohibiting the operation of said compressor motor, a signal for prohibiting the restart of said compressor motor until the passage of a predetermined length of time, said timer circuit further producing a signal permitting the restart of said compressor motor after the lapse of said predetermined length of time, said timer circuit being reset by the initial pulse produced by said main control circuit, a logic gate operated in response to the output signals produced by said temperature detector circuit, said main control circuit and said timer circuit for effecting selected one of prohibition and permission of the operation of said compressor motor, said logic gate producing a signal for supplying current to said compressor motor when all of said temperature detector circuit, said main control circuit and said timer circuit produce a signal permitting the operation of said compressor motor, said logic gate producing a signal for cutting off the current flow in said compressor motor when at least one of said temperature detector circuit, said main control circuit and said timer circuit produces a signal prohibiting the operation of said compressor motor, switch means for turning on and off the current flow in said compressor motor in response to the output signal of said logic

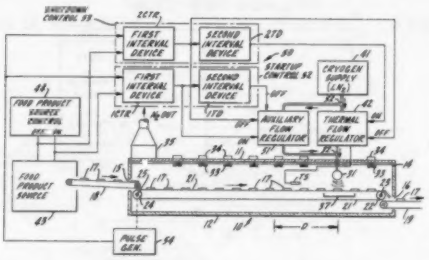
gate, and an auxiliary control switch connected in parallel to said manual switch, said auxiliary control switch being turned on at least during the period of the presence of said signal prohibiting the restart of said compressor motor, in response to the signal generated by said timer circuit for prohibiting the restart of said compressor motor.

4,142,376

CONTROL FOR CRYOGENIC FREEZING TUNNEL

Glenn A. Sandberg, Lockport, Ill., assignor to Formax, Inc., Mokena, Ill.

Filed Nov. 2, 1977, Ser. No. 847,718
Int. Cl.[2] F25D 7/00
U.S. Cl. 62—158 **12 Claims**



1. A control for a cryogenic freezing tunnel of the mind comprising an elongated insulated freezing chamber, conveyor means for transporting food products from a food product source into and through the freezing chamber, cryogen spray means for spraying a liquified cryogen onto the food products on the conveyor at a predetermined spray position on the path in the freezing chamber, cryogen conduit means connecting a liquified cryogen supply to the spray means, and thermal regulator means, connected to the cryogen conduit means, for regulating the rate of flow of the cryogen to the spray means over a range between cutoff and a maximum rate of flow in accordance with varying thermal conditions in the chamber, the control comprising:

auxiliary regulator means, connected to the cryogen conduit means, actuatable between a cutoff condition and a flow condition maintaining a predetermined rate of flow of cryogen to the spray means, independently of the thermal regulator means;

first startup interval means, coupled to the food product source, for actuating the auxiliary flow regulator means to its flow condition after a first predetermined startup interval beginning with the initiation of a supply of food products from the food product source to the conveyor means;

and second startup interval means for actuating the auxiliary flow regulator means to its cutoff condition after a second predetermined startup interval beginning with the termination of the first startup interval.

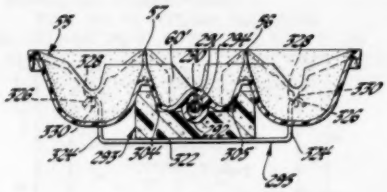
4,142,377

ICE MAKER FLEXIBLE TRAY CONSTRUCTION

Thomas H. Fogt, West Carrollton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 2, 1977, Ser. No. 856,918
Int. Cl.[2] F25C 1/10
U.S. Cl. 62—135 **1 Claim**

1. In an automatic ice maker including a support for rotatably supporting a flexible plastic ice tray for twistable movement, said tray being provided with at least three longitudinal rows of pockets therein including a center row of pockets oriented on the longitudinal rotational axis of said tray, said support having integral front end and rear end journal means for journaling the twistable flexible rotatable movement of said tray along said axis of rotation, said tray being further provided with integral front end journal connecting means comprising a boss on said tray front end forming a central cavity for reception of said front end journal means and an inverted channel extending from said central cavity along said axis of rotation in the bottom wall of at least the first and second pockets of said tray center row of pockets, means for filling said tray pockets with a charge of water, means for freezing the charge of water in the tray pockets into ice pieces, and means responsive to the temperature of the charge in said second pocket for rotating and twisting said tray when said charge is frozen whereby the frozen ice pieces are harvested from all the tray pockets and adapted for discharge into a receptacle, the improvement including an integrally molded open ended semi-cylindrical tray portion in communication with said central cavity and enclosing only the portion of said inverted channel formed in said first pocket to form a guide, a closed ended plastic tube having enclosed therein a temperature sensor, said tube extending sufficiently through said central cavity and said guide to position said temperature sensor in the portion of said inverted channel formed in the bottom wall of said second pocket, a separate rectangular sectioned block of insulation at least as long as said inverted channel and positioned on the underside of said tray's center row of pockets to provide a cover for said



inverted channel thereby to enclose the temperature sensor outside said guide and adjacent said second pocket, said block having a recessed portion on its upper surface defined by peripheral side and back walls which conform to the underside of said first and second pockets to close the portion of said inverted channel formed in the bottom wall of said second pocket and isolate said temperature sensor, whereby said temperature sensor is insulated by said block from said freezing means so that said temperature sensor is sensitive only to the temperature of the charge in said second pocket, said block operative to insulate the bottom walls of said center row first and second pockets thereby insuring that the charge of water therein is not frozen into solid ice pieces prior to the freezing of the charge of water in the remaining tray pockets into solid ice pieces, and securing means for releasably retaining said insulation block on said tray sufficiently loosely to permit relative movement between said block and tray, whereby said block is shiftable with respect to said tray in reponse to twisting flexible movement of said tray during its rotation such that said tray is free to flex each tray pocket, including said second pocket, in a manner sufficient to insure the release of the ice pieces formed therein.

4,142,378

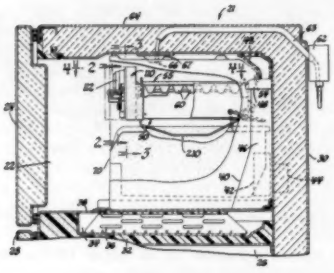
CAM CONTROLLED SWITCHING MEANS FOR ICE MAKER

James A. Bright, Dayton, and Homer W. Deaton, Centerville, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 2, 1977, Ser. No. 856,962
Int. Cl.[2] F25C 1/10
U.S. Cl. 62—135 **3 Claims**

1. In an automatic ice maker including a support, a tray mounted for rotatable movement on said support, means for supplying liquid to said tray, temperature-responsive means for sensing the temperature of the liquid in said tray, means for freezing the liquid in said tray, an electric drive motor, a disc

rotatively mounted on one side of a wall of said support, said motor operative to rotate said disc, means operated by said drive motor for rotating said tray and ejecting frozen liquid therefrom, bin means for collecting the frozen liquid ejected from said tray, electrical control circuit means for said ice maker and said motor, wherein the improvement comprises a plurality of circular cam tracks concentrically arranged on the face of said disc in opposed relation to said one side of said wall, each cam track formed with a predetermined cam profile, a plurality of through bores in said wall aligned in a common plane, said wall having a circuit board affixed on its opposite side, aperture means in said circuit board aligned with said bores, each bore having its principal axis aligned on the medial radius of one of the cam tracks, each of the bores having a cam follower pin located therein of a predetermined length exceeding the overall dimension between said wall one side and the outer surface of said circuit board, said circuit board having a plurality of flexible parallel spring blade switches cantilever affixed to the outer surface thereof, a contact on the free end of each said blade switch movable therewith, a plurality of stationary contacts affixed on said circuit board for contact by an associated blade switch contact, said control circuit means connecting said movable and stationary contacts, each said spring blade switch aligned on the principal axis of its associ-



ated follower pin such that an intermediate portion of each blade switch is contacted by the adjacent end of its associated follower pin, whereby said disc having a rest position resulting in one or more of the follower pins being biased by their associated blade switches into a first spaced relation with their associated cam tracks causing the movable contact on such blade switches to be in engagement with their associated stationary contact energizing portions of said control circuit means, said control circuit means interconnecting said liquid sensing means with said motor whereby upon said liquid freezing into ice pieces said motor is energized so as to initiate rotation of said disc, and whereby upon rotating said disc certain of the cam track profiles effecting a predetermined axial movement of selected ones of the follower pins to a second position causing the movable contact on their associated blade switches to move out of engagement with their associated stationary contact deactivating portions of said control circuit means, and whereby continued rotation of said disc resulting in selected ones of the blade switches returning their associated follower pins to their first positions causing the movable contact on their associated blade switches to move into engagement with their associated stationary contact, activating other portions of said control circuit means in response to rotation of said disc resulting in selected functions of said ice maker being performed in a predetermined sequence.

4,142,379

WASTE ENERGY RECOVERY SYSTEM

Henry W. Kuklinski, 6222 SW. 2nd Ct., Plantation, Fla. 33314

Filed Aug. 16, 1976, Ser. No. 714,630

Int. Cl.[2] F25B *1/00*

U.S. Cl. 62—179 **3 Claims**

1. An energy saving device for increasing the operational efficiency of an air conditioning system having a compressor utilizing a refrigerant while providing heat energy for a stored liquid comprising:

a liquid storage tank;

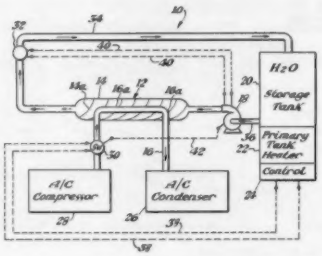
liquid primary heating means connected to said storage tank;

a control means connected to said liquid primary heating means;

a heat exchanger, said heat exchanger including an outer chamber having an inlet and an outlet and an inner chamber having an inlet and an outlet;

means for connecting the inlet and the outlet of said outer chamber to said liquid storage tank;

compressor conduit inlet means connected to said inner chamber outlet of said heat exchanger;



an outlet compressor refrigerant conduit means connected to said inner chamber inlet of said heat exchanger; a refrigerant pressure responsive switching means connected to said outlet compressor refrigerant conduit means and electrically connected to said primary heater control means, said pressure responsive switching means for shutting off the primary heater control whenever a predetermined pressure of refrigerant exists in said compressor unit; a circulating pump connected to said outer chamber inlet conduit and said storage tank; and thermostatic switch means connected in said outlet outer chamber return line and coupled to said outlet for controlling the actuation of said circulating pump as a function of liquid temperature in said return line.

4,142,380

ENCAPSULATED REFRIGERATOR

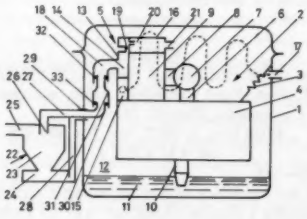
Jan Dyhr, Sonderborg, and Ole J. Nissen, Augustenborg, both of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed Nov. 7, 1977, Ser. No. 849,110

Claims priority, application Fed. Rep. of Germany, Nov. 8, 1976, 2650935

Int. Cl.[2] F25B *1/02, 31/00, 43/02*

U.S. Cl. 62—471 **7 Claims**



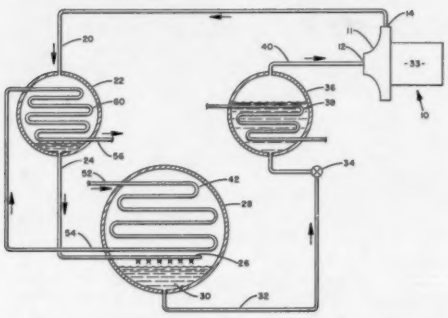
1. An encapsulated refrigerator assembly, comprising, a capsule having an oil sump at the bottom thereof, an integrated motor unit and compressor unit mounted in said capsule, said compressor unit having compressor inlet means, a separator having an oil collecting chamber at the bottom thereof, a

refrigerant gas outlet at the top of said separator and a liquid outlet at the bottom thereof for said collecting chamber, port means in said capsule, first fluid passage means connecting said separator gas outlet to said compressor inlet means through said capsule port means, and second fluid passage means providing communication between said collecting chamber liquid outlet and the interior of said capsule through said capsule port means, said second fluid passage means including a passage in said collecting chamber to the top of said separator.

4,142,381
FLASH TYPE SUBCOOLER

William J. Lavigne, Jr., Fayetteville, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Aug. 29, 1977, Ser. No. 828,446
Int. Cl.² F25B 1/10, 1/00
U.S. Cl. 62—510 **5 Claims**



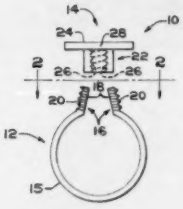
1. A flash subcooler for use in a refrigeration system having a refrigerant which comprises:
- a pressurized casing;
- a heat exchanger mounted within the casing;
- means for supplying the heat exchanger with a cooling fluid;
- a distribution box for discharging the refrigerant throughout the casing;
- flashing means mounted within the casing for receiving liquid refrigerant and discharging a combination of liquid and gaseous refrigerant within the distribution box;
- means for supplying liquid refrigerant to the flashing means; and
- outlet means for discharging refrigerant from the subcooler whereby part of the liquid refrigerant entering the subcooler is flashed to the gaseous state absorbing heat from the remaining liquid refrigerant, said gaseous refrigerant being recondensed by the heat exchanger and the now cooled combination of liquid refrigerant that entered the subcooler and did not change state with the recondensed liquid refrigerant being discharged from the subcooler.

4,142,382
ADJUSTABLE TOE RING

Linda M. Fix, 1805 Kent Rd., Pittsburgh, Pa. 15241, and Gloria L. Lepiane, 365 Canan Dr., Pittsburgh, Pa. 15236

Filed Mar. 31, 1977, Ser. No. 783,193
Int. Cl.² A44C 9/02, 25/00
U.S. Cl. 63—2 **10 Claims**

1. A ring for an appendage comprising:
- an open ring-shaped portion having a pair of spaced tabs at the ends thereof;
- a cap having a hollow body;
- said tabs and internal walls of said hollow body being sloped relative to one another to adjust the size of said ring-shaped body when said hollow body is displaced relative to said tabs; and
- means on said cap and said body portion for securing said cap on said tabs while urging said tabs together to decrease inside dimension of said ring-shaped body portion,

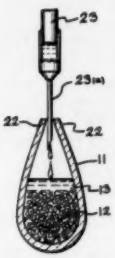


said securing means being capable of securing said cap on said tabs in any of a plurality of positions.

4,142,383
LIQUID FILLED SEALED GLASS ORNAMENT AND METHOD

Wolfgang R. Eberhart, Windsor, Canada, assignor to Eberhart Glass Blowing Ltd., Windsor, Canada

Filed Aug. 17, 1977, Ser. No. 825,294
Int. Cl.² A44C 25/00, 17/00, 17/02; B32B 31/14
U.S. Cl. 63—23 **17 Claims**



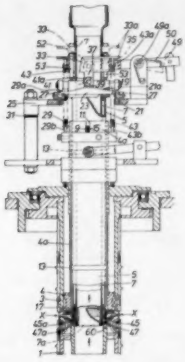
9. The decorative object which comprises:
- (a) a hollow transparent glass envelope with a decorative portion and having an opening with a roughened surface outside of and surrounding the opening remote from the decorative portion;
- (b) a viscous liquid provided inside the envelope in an amount which leaves a small gas pocket in the envelope with visible particles contained in said liquid, wherein the particles appear to float upon agitation; and
- (c) a cap sealed over and bonded to the roughened surface surrounding the opening with a resin which is impervious to the liquid, thereby sealing said liquid in said decorative object.

17. The method for the fabrication of a decorative object which comprises:
- (a) providing a hollow transparent glass envelope having a decorative portion and an opening, said envelope having an external wall with a roughened surface thereon surrounding the opening remote from the decorative portion;
- (b) providing a viscous liquid with visible particles and placing said liquid inside the envelope through the opening without wetting the opening in an amount which leaves only a small gas pocket in the envelope adjacent the opening and above the liquid wherein the particles appear to float upon agitation in the liquid; and
- (c) bonding a cap over the opening on the roughened surface with the gas pocket adjacent the opening with a resin which is impervious to the liquid, thereby sealing said liquid within the decorative object.

4,142,384
TENSIONING KNITTED FABRIC

Gillies Wood, Leicester, England, assignor to Bentley Engineering Company Limited, England

Filed Sep. 16, 1977, Ser. No. 834,003
Claims priority, application United Kingdom, Sep. 18, 1976, 38793/76
Int. Cl.[2] D04B *15/92*
U.S. Cl. 66—149 S 10 Claims



1. A circular knitting machine having a cylindrical array of needles for knitting fabric and means for tensioning the fabric as it is knitted, wherein the tensioning means comprises:

a throat piece within the cylindrical array of needles;

a guide surface on the throat piece for guiding fabric downwardly from the needles as it is knitted;

at least one reciprocating resilient annular member movable downwardly over the guide surface of the throat piece to trap and downwardly tension any fabric thereon;

means for effecting vertical reciprocatory movement of said annular member;

a suction tube extending upwardly centrally of said annular member;

means for creating an air flow through the suction tube to entrain fabric upwardly; and

a smooth annular rim of the suction tube around which the fabric is drawn as it passes down the guide surface and then upwardly through the suction tube, said smooth annular rim being lower than said annular member.

4,142,385
APPARATUS FOR WET PROCESSING TEXTILE MATERIAL

Sven Olof Sandberg, and Sven R. E. Smith, both of Avesta, Sweden, assignors to Avesta Jernverks AB, Avesta, Sweden

Continuation-in-part of Ser. No. 457,097, Apr. 1, 1974, Pat. No. 3,952,558. This application Apr. 5, 1976, Ser. No. 673,419
Claims priority, application Sweden, Mar. 28, 1973, 7304386
Int. Cl.[2] D06B *3/28*
U.S. Cl. 68—178 11 Claims

1. Apparatus for wet processing textile material, comprising in combination

a vessel containing a bath of treatment liquid,

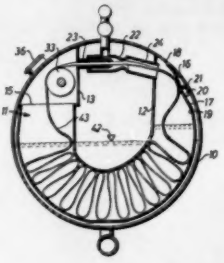
an essentially U-shaped perforated guiding structure positioned within said vessel for guiding said web through said bath and having upwardly extending legs forming outlet and inlet portions thereof and extending at least partially above said bath,

means for circulating a textile material in the form of an endless web along a closed path extending in part through said bath within said guiding structure,

said means including a substantially straight jet nozzle structure extending substantially horizontally above said bath and between said outlet and inlet portions of said U-shaped guiding structure and terminating with a substantially horizontal discharge in said inlet portion and horizontally spaced from the outer wall of said inlet portion, said jet nozzle structure having an inner passage and a nozzle outlet through which said web passes in turn when the apparatus is in use,

means for supplying a portion of said treatment liquid to said nozzle structure under pressure for producing a jet of said liquid drawing said web in string form through said inner passage and carrying it from said nozzle structure,

a deflector surface located after said nozzle sturcture and in substantially horizontal alignment therewith for deflecting said jet and the web carried thereby before reaching the bath,

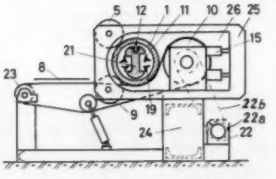


said nozzle outlet and said deflector surface being substantially spaced apart to provide a horizontal space therebetween substantially free from any structure imposing any restricting or guiding action on the jet and the web carried thereby before reaching said deflector surface, said inlet portion at said termination of said jet nozzle structure having inner boundary side walls horizontally spaced apart transverse to the direction of travel of said web by a dimension exceeding the maximum width of the web to thereby permit the web to expand from a string form to a band form.

4,142,386
THROUGHPASS LEATHER WORKING MACHINE, ESPECIALLY AN EMBOSSING AND IRONING MACHINE

Jiri Dokoupil, Hochstrasse 9, 6251 Glückingen, Fed. Rep. of Germany

Filed Nov. 18, 1977, Ser. No. 852,853
Claims priority, application Fed. Rep. of Germany, Nov. 26, 1976, 2653682
Int. Cl.[2] E05B *67/10*; B30B *3/04*
U.S. Cl. 69—43 17 Claims



1. A throughpass embossing and ironing machine for processing leather pieces moving in a predetermined direction of travel comprising:

at least one substantially tubular-shaped thick-walled embossing or ironing element having opposed ends and an outer surface including an embossing or ironing zone;

at least one of said opposed ends being devoid of a central journal;

said embossing or ironing element having at each of its

opposed ends externally of the embossing or ironing zone substantially cylindrical contact surfaces at the outer surface thereof;

means for exerting embossing or ironing forces at said cylindrical contact surfaces at said outer surface of said embossing or ironing element;

said embossing or ironing zone transmitting the embossing or ironing forces to the surface of a leather piece processed by the machine;

and

elastic support means and at least one counter-pressure roll for supporting and transporting the leather pieces processed by the machine.

4,142,387

IDENTIFICATION DEVICE

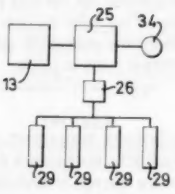
Lars A. Bergkvist, Gottne, 890 42 Mellansel, Sweden

Filed Nov. 2, 1977, Ser. No. 847,712

Claims priority, application Sweden, Nov. 19, 1976, 76129774

Int. Cl.[2] E05B *49/00*

U.S. Cl. 70—278 **8 Claims**



1. An identification device comprising a housing, a key-like member insertable into the housing, a first screen provided on the member and a second screen mounted in the housing to be in registry with the first screen when the member is inserted into the housing, said screens including a series of line indicia to cooperatively produce a moire inteference pattern when the first screen is moved into registry with the second screen, the indicia lines of the first screen being spaced to form non-readable coded information and the indicia lines of the second screen being spaced to form non-readable code-key information, the moire interference pattern produced by registry of the screens being readable decoded information of the first screen, and means positioned adjacent the two screens for reading the decoded information of the moire pattern and generating a first electrical signal in response thereto.

4,142,388

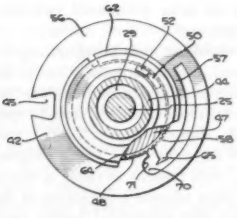
TUMBLER WHEELS FOR COMBINATION LOCKS

Peter J. Phillips, Redondo Beach, Calif., assignor to Klaus W. Gartner, La Palma, Calif.

Filed Mar. 30, 1977, Ser. No. 782,845

Int. Cl.[2] E05B *37/08*

U.S. Cl. 70—316 **4 Claims**



1. In a system for connecting a gate ring and a drive member of a tumbler wheel together wherein the gate ring includes a single leg unitarily formed from the gate ring with gripping means thereon, the leg normally biasing the gripping means against the drive member whereby the gripping means grips the drive member so that the gate ring and the drive member normally rotate together, the improvement comprising:

opening means in the gate ring adjacent the leg and having a curved portion about at least part of its periphery for receiving a key having a curved portion about at least a portion of its periphery,

camming means on the leg opposite the opening means in the plane of the gate ring for camming the key against the curved surface of the opening on rotation of the key in the opening to a releasing position and reacting thereto against the bias of the leg to move the leg to remove the gripping means away from the drive member, the curved portions on the opening means and the camming means on the leg being provided so that when the key is in the releasing position the leg does not rotate the key away from the releasing position.

4,142,389

CYLINDER LOCK

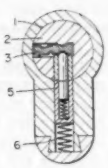
Abraham Bahry, and Moshe Dolev, both of 45 Sokolov St., Holon, Israel

Filed Nov. 3, 1977, Ser. No. 848,078

Claims priority, application Israel, Nov. 24, 1976, 50984

Int. Cl.[2] E05B *27/00*

U.S. Cl. 70—359 **6 Claims**



1. A dual pin tumbler lock,

said lock comprising a housing,

a cylinder within said housing,

said cylinder rotatable by key means,

said key means having two oppositely disposed planar faces,

first bore means in said cylinder for receiving pin tumblers therein,

said first bore means having the axes thereof substantially normal to the axis of said cylinder,

second bore means in said housing for receiving pin tumblers therein,

said second bore means aligned with said first bore means,

first tumbler means in said first bore means,

second tumbler means in said second bore means,

said first and second tumbler means comprising cylindrical outer parts and concentric inner parts telescopically slidable within the outer parts,

means in said housing for forcing said second tumblers into said aligned first bores to thereby prevent rotation of said cylinder, and

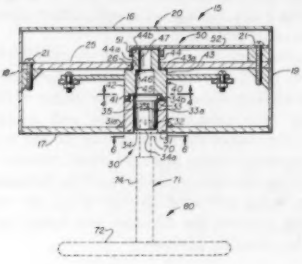
said key means comprising concentric projections and/or recesses on each side of a longitudinal axis on each of said planar faces for aligning said pin tumblers for moving said first pin tumblers to force said second tumblers out of said first bores, whereby said cylinder becomes rotatable, regardless of the orientation of the key means and regardless of into which of the dual locks the key is inserted.

4,142,390

DOUBLE SAFETY LATCH FOR TRAILER DOORS

Vernon E. Schroeder, 12910 Tall Forest, Cypress, Tex. 77429

Filed Feb. 22, 1977, Ser. No. 770,645
Int. Cl.[2] E05B *9/04*
U.S. Cl. 70—371 **2 Claims**



1. A safety latch for a trailer door comprising:
a. a housing;
b. said housing having spaced front and back walls connected by side walls with an intermediate panel connected to said side walls and extending substantially parallel between said front and back walls;
c. a first member secured to said front wall and having a longitudinal passage therethrough;
d. said first member having lateral recesses communicating with the longitudinal passage;
e. a closure member for fitting in the longitudinal passage;
f. said closure member having retractable pins for fitting within the lateral recess to secure said closure member in said first member;
g. actuating means connected with said pins and operable to retract said pins from the recesses whereby said closure member may be withdrawn from said first member;
h. a second member rotatably supported on said panel in axial alignment with said first member;
i. said second member having a first longitudinal noncircular passage having a smaller width than the longitudinal passage in said first member and axially aligned with the longitudinal passage in said first member;
j. said second member having a second longitudinal passage axially aligned with and smaller in width than the first noncircular passage;
k. restraining means engaging said second member to restrain it against rotation;
l. shaft means;
m. engaging means on said shaft means engageable with said actuating means to retract said pins for removal of said closure member from the longitudinal passage in said first member and expose the first and second passages in said second member;
n. a noncircular portion on said shaft means for fitting in the longitudinal noncircular passage in said second member; and
o. said shaft means having an end surface to abut and disengage said restraining means from said second member when said shaft means is inserted in said first and second members whereby said shaft means and second member may be rotated.

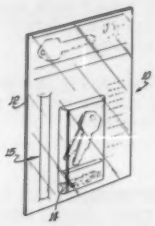
4,142,391

RE-KEYING LOCKING KIT AND METHOD THEREOF

Robert M. Paig, 9282 Nautilus Dr., Huntington Beach, Calif. 92646

Filed Aug. 18, 1976, Ser. No. 715,632
Int. Cl.[2] E05B *63/00*
U.S. Cl. 70—461 **1 Claim**

1. A re-keying lock kit, for use with existing lock units that contain a removable cylinder pin plug, wherein the existing key has key cuts which are in cooperative relationship with the key pins all of which are to be discarded, and wherein the kit comprises in combination:
at least one key having pre-selected key cuts formed therein different from the key cuts on the key to be discarded;
a plurality of pre-selected key pins of various lengths, each



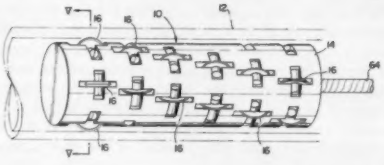
particular pin being color coded to correspond with a particular length which cooperatively interacts with a respective pre-selected cut for said key; and
a hollow cylinder of the same diameter as the cylinder pin plug which removably pushes the cylinder case out while holding the internal parts in place.

4,142,392

INTERNALLY GROOVE FORMING APPARATUS FOR HEAT EXCHANGING PIPES

Izumi Ochiai; Masahiro Miyagi, both of Ohiramachi, and Yoichi Wakabayashi, Sano, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Sep. 12, 1977, Ser. No. 832,540
Claims priority, application Japan, Apr. 20, 1977, 52-44474
Int. Cl.[2] B21D *17/04*
U.S. Cl. 72—113 **3 Claims**



1. An apparatus for forming a number of substantially longitudinally extending grooves in an inner surface of a heat exchanging pipe with the inner surface having therein no grooves in its initial form, comprising
a cylindrical holder adapted to be loosely fitted in the heat exchanging pipe in concentric relation thereto;
a plurality of rolling tools rotatably mounted on said cylindrical holder, said rolling tools each having a single peripheral tip, in which an imaginary circle subscribing said rolling tools is interposed between an outer peripheral surface and an inner peripheral surface of the heat exchanging pipe; and
said plurality of rolling tools being arranged in a plurality of axially spaced, circumferentially oriented rows, each of said circumferentially oriented rows including a plurality of said rolling tools circumferentially spaced apart from and generally aligned with each other, the rolling tools in one of two adjacent rows being disposed in staggered relationship with respect to those in the other row;
and in which axial relative movements of the heat exchanging pipe and said cylindrical holder cause said tools to form a number of substantially longitudinally extending grooves in the inner peripheral surface of the heat exchanging pipe.

4,142,393

PROFILING MACHINE

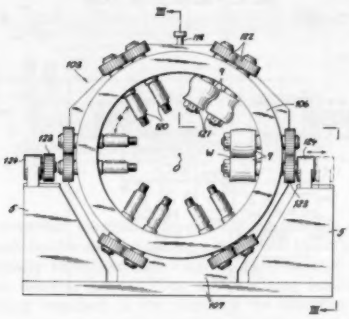
Rudolf Nagel, Schönaich, Fed. Rep. of Germany, assignor to Maschinen- und Werkzeugbau GmbH, Dortmund-Hombruch, Fed. Rep. of Germany

Filed Oct. 4, 1977, Ser. No. 839,261

Claims priority, application Fed. Rep. of Germany, Oct. 5, 1976, 2644900

Int. Cl.[2] B21D 5/08

U.S. Cl. 72—181 7 Claims



1. A machine for profiling flat elongate workpieces by progressive deformation of their cross-sections, comprising:

a plurality of cascaded working stations disposed along a transport path and provided with shaping means engageable with a workpiece to be profiled, at least one of said working stations comprising a stationary support having an at least partly ring-shaped body on an axis parallel to said transport path and an annular carrier coaxial with said support encompassing said transport path, said carrier being rotatably held on said support and being fitted with a plurality of peripherally spaced, inwardly extending roller mountings selectively placeable in an operating position in line with said transport path by rotation of said carrier, said shaping means including differently contoured roller pairs respectively held on said mountings for potential engagement with a workpiece arriving over said transport path; and

drive means for advancing said workpieces along said transport path.

4,142,394

APPARATUS FOR FORMING CIRCULARLY BENT ARTICLES FROM A STRAIGHT PROFILED STRIP

Cornelis C. Damman, Diemen, Netherlands, assignor to Holland Mechanics B.V., Diemen, Netherlands

Division of Ser. No. 742,679, Nov. 17, 1976, Pat. No. 4,054,982. This application Aug. 4, 1977, Ser. No. 821,967

Claims priority, application Netherlands, Nov. 21, 1975, 7513654; Mar. 12, 1976, 7602645

Int. Cl.[2] B21D 7/00

U.S. Cl. 72—220 3 Claims

1. A bending apparatus for forming curved end portions on a straight piece of metal strip material of predetermined cross-sectional shape comprising

a substantially horizontal table having a front and rear end;

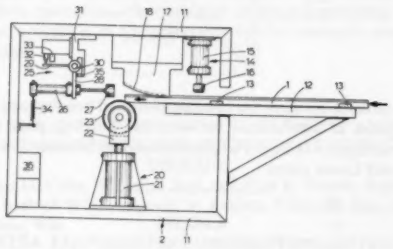
longitudinal guide means on said table for slidably receiving said straight strip piece;

a curved stationary bending die having a downwardly turned die face, said die face having a forward end and said die face extending in a curve rearwardly and upwardly from said forward end, said bending die being mounted adjacent the rear end of said table in line with said longitudinal guide means and with the front end of said die face at an elevation above the plane of said table for allowing said metal strip when placed on said table in said guide means to be moved forwardly just below said die face forward end with minimum vertical clearance

abutment means disposed towards the rear of said bending die and in line with said guide means, said abutment means being mounted for movement between a forward operation position, in which the strip placed on said table with its forward end face against the abutment means occupies a selected position relative to said bending die, and a retracted rear position;

first drive means for moving said abutment means between said two positions;

clamping means arranged above said table and movable between an operating position for clamping a strip placed in said guide means against said table, and a rest position retracted from said table;



second drive means for moving said clamping means between said two positions thereof:

movably mounted press means arranged rearwardly of said rear end of said table and below said bending die for vertical movement towards and away from said die and adapted to engage the forward end of the strip clamped on said table to press and bend an end portion of said strip against said die face of said bending die;

third drive means for moving said press means towards and away from said bending die; and

control means activated by said abutment means when the latter is contacted by the forward end of a strip said control means when activated causing the successive operation of said second, first and third drive means, respectively.

4,142,395

BENDING MACHINE

Reinhold Kelm, Daaden, Fed. Rep. of Germany, assignor to Baumgarten Montage GmbH, Weitefeld, Fed. Rep. of Germany

Filed Mar. 15, 1977, Ser. No. 777,712

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1976, 2610774

Int. Cl.[2] B21D 5/04

U.S. Cl. 72—319 5 Claims

1. Folding and bending machine for sheet metal workpieces, comprising:

(a) a lower plate having a longitudinal bending edge constituting the bending axis of a workpiece,

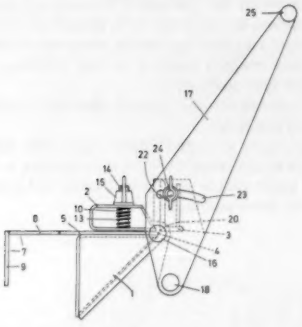
(b) an upper plate adjustably mounted with respect to the bottom plate for accommodating workpieces of different thicknesses in a plane extending between the upper and lower plates,

(c) an operating arm pivotally mounted about the axis of the bending edge,

(d) a carrier arm mounted to the operating arm for pivoting about a swinging axis spaced from the bending axis,

(e) a bending plate mounted on the carrier arm and spaced from the pivoting axis so that upon pivoting of the operating arm, the bending plate intersects the plane extending between the upper and lower plates, and

(f) means for clamping the carrier arm to the operating arm for varying the angular position of the carrier arm with respect to the operating arm and consequently varying the



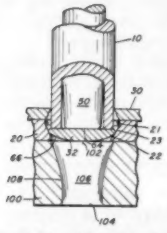
distance between the bending plate and bending axis at the point of intersection between the bending plate and a workpiece lying in the plane extending between the upper and lower plates.

4,142,396

BLANKING AND FORMING TAPERED WALL ARTICLES

Charles H. Deveney, Lower Burrell, and Ronald L. Kolakowski, Washington, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Nov. 17, 1977, Ser. No. 852,319
Int. Cl.[2] B21D *24/16*
U.S. Cl. 72—329 **3 Claims**



1. A method of producing blanks and shaped articles therefrom from sheet material, the method comprising the steps of:

(a) supporting the sheet material on a blanking die having a substantially circular entrance aperture, an exit aperture and an inwardly converging funnel-shaped transition zone extending from the entrance aperture to the exit aperture;

(b) punching a blank from the sheet material using a blanking punch axially aligned with the blanking die, the entrance aperture of the blanking die having a radius 15 to 25% of the thickness of the sheet material greater than the radius of the blanking punch, the exit aperture having an extent greater than the cross-sectional area of the blanking punch, the blank having a side away from the blanking punch having a curved configuration and having a sheared edge substantially free of secondary fractures, the punching being effected by displacing the blanking punch into the entrance aperture, the transition zone controlling the motion of the blank on shearing from the sheet material and permitting the blanking punch to maintain engagement with the blank as it is moved through the blanking die to the exit aperture; and

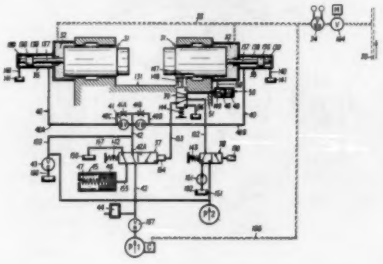
(c) forming the blank into a shaped article by means of a second punch and die assembly wherein the exit aperture of the blanking die services as a blank holder for the second die.

4,142,397

COUNTERBLOWING MACHINE HAMMER

Othmar Heimel, Behamberg, Austria, assignor to "Wefoba" Werkzeug-und Formenbau Gesellschaft m.b.H. Co. KG, Steyr, Austria

Filed Oct. 5, 1977, Ser. No. 839,434
Claims priority, application Austria, Oct. 14, 1976, 7665/76
Int. Cl.[2] B21J *7/24, 7/28*
U.S. Cl. 72—407 **6 Claims**



1. A counterblow machine hammer comprising:

two hammer tups;

guide means for supporting said hammer tups in mutually opposing relationship in such manner that forward working ends of said hammer tups face each other and rear ends face away from each other, the rear ends being positioned in separate air chambers formed by first housings defined within said guide means, the rear ends of said hammer tups having portions protruding from said first housings;

second housing means adapted to define separate chambers for receiving said protruding portions of respective ones of said hammer tups, said protruding portions including pistons positioned in said second housing means;

pneumatic drive means acting on said rear ends of said hammer tups for pneumatically driving said hammer tups towards each other in a forward working movement direction, said pneumatic drive means including first conduit means for interconnecting said separate compressed air chambers, and second conduit means for connecting said first conduit means to a compressed air source; and

hydraulic means acting on said pistons of said protruding portions for hydraulically moving said hammer tups away from each other.

4,142,398

QUICK-CHANGE SYSTEM FOR PROGRESSIVE DIE TOOLING

Dietmar G. Quaas, Arlington Heights, Ill., assignor to Buhrke Industries, Inc., Arlington Heights, Ill.

Filed Apr. 20, 1977, Ser. No. 789,259
Int. Cl.[2] B21D *37/04*
U.S. Cl. 72—481 **3 Claims**

1. A system for expediting installation of tooling lanes on presses having high slide/bed parallelism and slide-guide accuracy and a die shoe mounted on the bed and a punch-holder adaptor mounted on the ram of said press, each die shoe and punch-holder adaptor supporting said system, comprising:

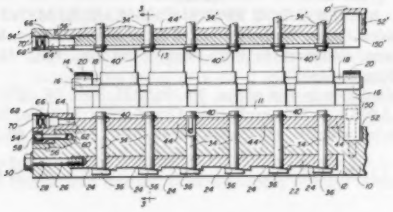
(a) first and second tenon means formed on opposite sides of said tooling lane;

(b) a back-up means longitudinally mounted in stationary relation on said die shoe and punch-holder adaptor adjacent to and spaced from said first tenon means;

(c) a first gib means longitudinally mounted against lateral movement on said press between and in engagement with said first tenon means and said back-up means;

(d) a second gib means slidably cooperating with the second tenon means in lateral floating relation with said back-up means and in spaced and parallel relation with said first gib means to form a slidable tooling lane path between them;

(e) a plurality of locking members having longitudinally-inclined wedging heads at one end thereon extending through said die shoe and punch-holder adaptor and connecting with the gib means;



(f) a draw-bar longitudinally-slidable on said die shoe and punch-holder adaptor having a draw-bolt extending longitudinally therefrom and longitudinally-inclined wedging seats thereon for engaging said wedging heads on said locking members in the direction for cinching the first tenon means up against the first gib means and clamping said tooling lane against said press; and

(g) positive stop means mounted on said press at the end of the slidable tooling lane and cooperating with the end of the tooling lane for longitudinal locating of said tooling on said press.

4,142,399

METHOD FOR AUTOMATIC QUANTITATIVE MEASUREMENT OF HYDROGEN IN A METAL AND AN APPARATUS FOR CARRYING OUT SAID METHOD

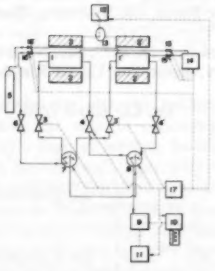
Hideshi Sato, Tokyo; Takashi Otsubo, Machida; Syunsuke Goto; Minoru Amano, both of Sagamihara, and Naoyuki Seriu, Machida, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Jun. 20, 1977, Ser. No. 808,357

Claims priority, application Japan, Jun. 19, 1976, 51/71701; Mar. 8, 1977, 52/24406

Int. Cl.[2] G01N *7/14, 31/00*

U.S. Cl. 73—19 **4 Claims**



1. In a method for automatically and quantitatively measuring hydrogen gas in a metal consisting essentially of the steps of introducing test pieces into a plurality of hydrogen collectors provided with valves at the inlet and outlet thereof and arranged in a system for quantitatively measuring hydrogen through which a carrier gas is continuously passed; maintaining the test pieces in the hydrogen collectors for a predetermined time so as to discharge hydrogen gas therefrom; feeding the hydrogen gas alternately from the hydrogen collectors to a gas analyzing unit by means of the carrier gas to quantitatively measure the hydrogen, while controlling the amount of gas flow by means of a valve which controls the amount of carrier gas flow; and recording the results of the quantitative measurement by means of an integrator, the improvement which comprises carrying out the discharge of the hydrogen at ordinary temperatues; allowing the carrier gas to by-pass the hydrogen collectors by closing the inlet and outlet valves of each of the hydrogen collectors for said predetermined time; repeating the quantitative measurement concerning each of the test pieces for a number of times sufficient to accurately measure the rate of discharge of the hydrogen from the test pieces per unit time as well as the total amount of hydrogen accumulated in the hydrogen collector; predetermining a program of the times per each quantitative measurement cycle, the number of the cycle, the timing of the valves operations, the timing of the operation of the gas analyzing unit and the timing of operation of the integrator by a sequence control mechanism; and conducting the valves operations, the operation of the gas analyzing unit and the operation of the integrator by the sequence control mechanism.

4,142,400

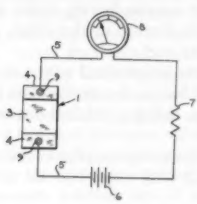
NITROGEN DIOXIDE SENSING ELEMENT AND METHOD OF SENSING THE PRESENCE OF NITROGEN DIOXIDE

Jeannine O. Colla, Whitefish Bay, and Paul E. Thoma, Burlington, both of Wis., assignors to Johnson Controls, Inc., Milwaukee, Wis.

Filed Mar. 7, 1977, Ser. No. 774,765

Int. Cl.[2] G01N *27/12;* **H01C** *13/00*

U.S. Cl. 73—23 **13 Claims**



1. An element capable of sensing the presence of nitrogen dioxide in the environment, comprising a film of a pyrolyzed polyaromatic polymer, and electrical leads connected to said film at spaced locations, the presence of nitrogen dioxide in the environment causing a change in the electrical characteristics of the film.

4,142,401

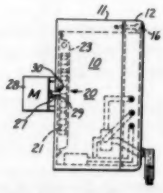
GAGE

Gardner P. Wilson, 587 S. Hill Ave., Pasadena, Calif. 91106

Filed Oct. 3, 1977, Ser. No. 838,914

Int. Cl.[2] G01B *13/12*

U.S. Cl. 73—37.5 **33 Claims**



1. A gage for measuring the width of a gap, said gage comprising: a gaging conduit having an inlet and an outlet; pressure means supplying gas under pressure to the inlet of the gaging conduit, said pressure means maintaining the gas pressure at

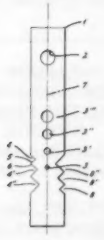
such a value that gas flow through the gaging conduit is in the non-compressible aerodynamic regime, said gaging conduit exhausting gas to a region of lower pressure; a hot-wire anemometer in the gaging conduit; and means responsive to the condition of the anemometer conduit to measure the size of the gap between the outlet of the gaging conduit and a surface as a function of gas flow rate in the gaging conduit.

4,142,402

DEPOSITION TEST COUPON

Terrence W. Mattioli, King of Prussia, and John R. Schieber, Holland, both of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed Mar. 6, 1978, Ser. No. 883,769
Int. Cl.[2] G01N *17/00*
U.S. Cl. 73—61.2 **14 Claims**



1. A deposition test coupon comprising:

a flat rectangular coupon having holes therein from one longitudinal end thereof to the other, said holes being graduated in size, and

notches in opposite longitudinal edges of the coupon near the end thereof having the smallest size hole, the notches along each edge defining notched-out areas of graduated size,

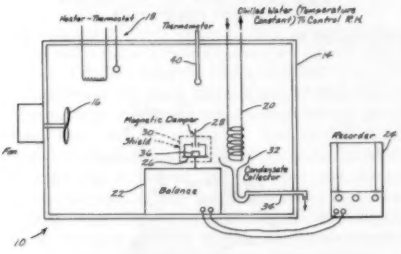
wherein the notches along one edge of the coupon are oppositely graduated with respect to the notches along the other edge.

4,142,403

METHOD AND MEANS FOR TESTING SOILS

Robert A. Lohnes, and Turgut Demirel, both of Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Oct. 17, 1977, Ser. No. 842,503
Int. Cl.[2] G01N *5/04, 25/56*
U.S. Cl. 73—76 **11 Claims**



1. A device for measuring the rate of evaporation in soil, comprising:

a testing chamber means;

means to selectively maintain a constant temperature within said chamber means;

means to maintain constant relative humidity within said chamber means;

means to circulate air within said chamber means;

scale means to continuously weigh a soil sample within said chamber means; and

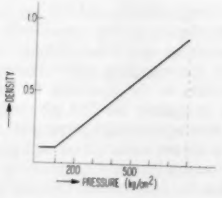
recording means operationally connected to said scale means to continuously record the weight of said soil sample.

4,142,404

METHOD FOR PRESSURE MEASUREMENT

Yasuhiro Ogata, Fujimiya, and Kenji Ariyasu, Tokyo, both of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation-in-part of Ser. No. 562,325, Mar. 26, 1975, Pat. No. 4,003,245. This application Oct. 5, 1976, Ser. No. 729,627
Claims priority, application Japan, Mar. 26, 1974, 49-33789
Int. Cl.[2] G01B *5/30*
U.S. Cl. 73—762 **15 Claims**



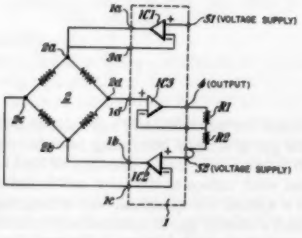
1. In a method for measuring pressures which comprises pressing a material for which a pressure measurement is desired against a recording sheet to form a color image due to the pressure and evaluating the changes in the optical color density or the color hue of the resulting color image on the recording sheet, the improvement which comprises said color image formation due to the pressure being effected by contacting a substantially colorless color former contained in synthetic polymer microcapsules with a color developer under pressure, and said microcapsules and said color developer being coated on a same side of a support thereby to form said recording sheet.

4,142,405

STRAIN GAUGE ARRANGEMENTS

Robin T. A. Stevens, C.I.L. Electronics Limited, Timberlaine Trading Estate Decoy Rd., Worthing, West Sussex, England (BN14 8ND)

Filed Oct. 25, 1977, Ser. No. 844,923
Claims priority, application United Kingdom, Oct. 27, 1976, 44573/76
Int. Cl.[2] G01B *7/16*
U.S. Cl. 73—763 **3 Claims**



1. An electronic d.c. amplifier arrangement in which the output of a first differential amplifier is connected to one bridge supply terminal, the output of a second differential

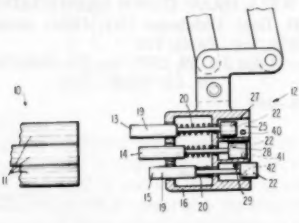
amplifier is connected to a second bridge supply terminal, respective bridge operating supply voltage terminals being connected to the positive inputs of said first and said second differential amplifiers, the negative input of said first differential amplifier being connected to a compensating terminal for a return connection to be provided from the point of connection of a bridge to the connecting conductor from said one bridge supply terminal, the negative input of said second differential amplifier being connected to a negative bridge response input terminal, and a positive bridge response terminal being provided for connection to the output of said bridge diagonally opposite to that connected to said negative response input terminal, said positive bridge response terminal being connected to the positive input of a third differential amplifier whose output is connected to an output terminal of said arrangement and whose negative input is connected to a terminal to provide for a connection to a tapping of a potential divider chain when the latter is connected between said output terminal and said second bridge operating supply voltage terminal.

4,142,406

TEST APPARATUS FOR CIGARETTE PACKING MACHINES

Heinz Focke, Verden Aller, Fed. Rep. of Germany, assignor to Focke & Pfuhl, Verden, Fed. Rep. of Germany

Filed Nov. 10, 1977, Ser. No. 850,317
Claims priority, application Canada, Jan. 6, 1977, 174339
Int. Cl.[2] G01N *3/42*
U.S. Cl. 73—819 **2 Claims**



1. In a testing device for cigarette packing machines for simultaneously testing the ends of cigarettes disposed in a group and including a support housing having a plurality of apertures extending therethrough, a plurality of tappet means slidably disposed in said apertures, biasing means axially acting on said tappet means, at least one passage transversely intersecting the path of travel of each of said tappet means, and radiant energy source means and detector means respectively mounted at opposite ends of said passage for providing and receiving a radiant energy beam upon engagement of all of said tappet means with an acceptable group of cigarettes, said radiant energy beam being interrupted upon engagement of one or more faulty cigarettes by one or more of said tappet means, the improvement characterized by:

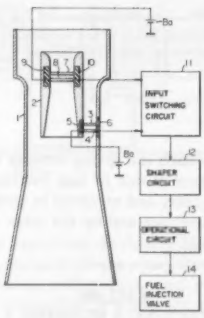
at least one additional transverse passage associated with the tappet means, said additional passage being disposed in the housing in the vicinity of the path of travel of the tappet means such that said additional passage is blocked by a tappet means displaced from its initial position.

4,142,407

AIR FLOW METERING APPARATUS FOR INTERNAL COMBUSTION ENGINES

Hiroshi Kuroiwa, Hitachi; Yoshishige Ohyama; Yutaka Nishimura, both of Katsuta, and Nobuaki Miyakawa, Hitachi, all of Japan, assignors to Hitachi, Ltd., Japan

Filed May 17, 1977, Ser. No. 797,690
Claims priority, application Japan, May 26, 1976, 51-60104
Int. Cl.[2] G01F *1/32, 5/00*
U.S. Cl. 73—118 **11 Claims**



1. An air flow metering apparatus for an internal combustion engine in which suction air flow fed to said engine is measured by a Kármán vortex type air flow meter disposed in an air suction passage, comprising at least two air suction passages each of which has a Kármán vortex type flow meter disposed therein, and input switching circuit means for receiving output signals from said vortex flow meters and for generating an output signal utilizing only the input signal from a first of said vortex flow meters when said input signal is below a predetermined reference value and utilizing the output of another of said flow meters when said reference value is exceeded, said reference value being set so as to result in detection of only stable vortexes over the whole operational range of the internal combustion engine, wherein one of said flow meters is disposed in the narrowest portion of a small size venturi having a suction passage of a relatively small crosssectional area, while the other flow meter is disposed in an annular space between the narrowest portion of a small venturi and a large venturi having a suction passage of a relatively large crosssectional area, said small venturi being concentrically disposed within the large venturi.

4,142,408

APPARATUS FOR MEASURING AXIAL THRUST OF A ROTATING MACHINE SHAFT

Serge Riazuelo, Montberon, France, assignor to ABG-SEMCA S.A., Toulouse, France

Filed Mar. 28, 1977, Ser. No. 781,960
Claims priority, application France, Mar. 29, 1976, 76 09252
Int. Cl.[2] G01L *5/12*
U.S. Cl. 73—140 **8 Claims**

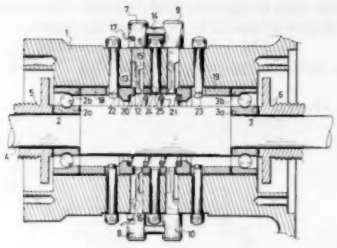
1. A device for measuring the axial thrust of a rotating shaft supported by bearings having inner and outer races wherein the outer races are mounted on a support, said measuring device comprising:

at least one radially disposed leaf spring member mounted in said support and having a spring leaf of predetermined elasticity connected to the outer race of one of said bearings in such a manner as to be subjected to axial thrust transmitted to said outer race,

said spring leaf including thereon a strain gauge of variable electrical resistance as a function of the flexure of said spring leaf,

said strain gauge being integrated with an extensometric

bridge circuit having electrical feed means and calibrated so as to furnish a measure of axial thrust as a function of the flexure of said spring leaf,



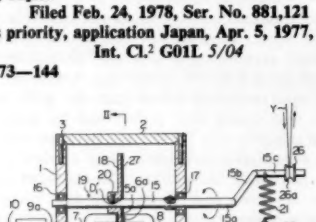
said spring leaf of each leaf spring member being connected to said outer race of one of said bearings by an axially movable crosspiece, and mounted in contact by one end against said outer race and by the other end against said elastic spring leaf.

4,142,409

DEVICE FOR DETECTING A RUNNING YARN TENSION

Kazuchika Miura, Mihara, Japan, assignor to Teijin Limited, Osaka, Japan

Filed Feb. 24, 1978, Ser. No. 881,121
Claims priority, application Japan, Apr. 5, 1977, 52/38135
Int. Cl.[2] G01L *5/04*
U.S. Cl. 73—144 **10 Claims**



1. A device for detecting a running yarn tension comprising:

a primary core formed in a U-shape, which core has primary windings, capable of being connected to an alternating current power source, wound thereon for electromagnetically exciting said primary core;

a secondary core formed in a U-shape, both ends of which face to those of said primary core for forming small air gaps therebetween so as to form a main magnetic circuit between said primary and secondary cores, said secondary core having secondary windings wound thereon for interlinking with said main magnetic circuit so as to induce a voltage therein;

movable means which is movable in accordance with changes detected in the running yarn tension; and

means associated with said movable means and moved within the outside of said small air gaps for by-passing magnetic flux from said main magnetic circuit so as to form an auxiliary magnetic circuit, wherein the width of said magnetic flux by-passing means, measured in a direction perpendicular to the moving direction of said magnetic flux by-passing means on a plane upon which said means is moved, is varied in accordance with the movement of said means due to changes in the running yarn tension,

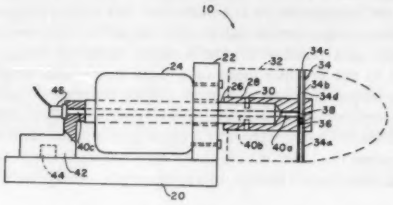
whereby the magnetic reluctance of said auxiliary magnetic circuit is varied in accordance with the changes in the running yarn tension.

4,142,410

TURNER-TRANSDUCER SYSTEM

John S. Pedgonay, P.O. Box 127, Aberdeen, Md. 21001

Filed Apr. 28, 1978, Ser. No. 900,789
Int. Cl.[2] G01M *9/00*
U.S. Cl. 73—147 **5 Claims**



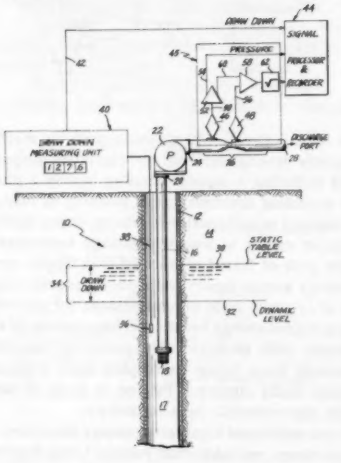
1. In a system for determining circumferential pressure distribution around a spinning body, including a shaft, means for holding the body for spinning by the shaft, means for spinning the shaft, and sensing means, the improvement comprising: said means for determining being means for giving direct pressure reading continuously around the circumference of spin, including a tube fixed transversely at a first end portion of the shaft for spinning with the shaft and having an end opening through the spinning body; the sensing means being a pressure transducer at a second end portion of the shaft and having a mounting stationary relative to said spinning; the shaft having a bore communicating with the tube and communicating with the pressure transducer through meeting of said shaft with a portion of said stationary mounting having a passage leading to said pressure transducer, whereby pressure distribution at said open end of the tube is communicated through the bore to the transducer as pressure distribution around the spinning body.

4,142,411

WATER WELL DRAW DOWN MONITORING SYSTEM

Clarence D. Deal, Oklahoma City, Okla., assignor to Electromeasures, Inc., Ennis, Tex.

Filed Jul. 19, 1977, Ser. No. 816,970
Int. Cl.[2] E21B *47/04*
U.S. Cl. 73—155 **10 Claims**



1. Apparatus for monitoring liquid draw down in a well, comprising:

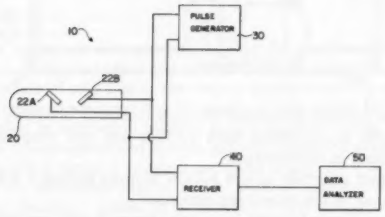
(a) a first assembly adapted to be lowered into the well bore, said assembly carrying pressure sensing means for sensing the hydrostatic pressure of the liquid in the well bore;
(b) said pressure sensing means comprising a piezo-resistive device, said device providing a pressure output signal;
(c) a measurement unit operatively connected to said first assembly comprising:
(i) power source means supplying an output voltage and having a regulator which regulates the output voltage of said power source means, for energizing said piezo-resistive device;
(ii) voltage modifying means connected to said piezo-resistive device for modifying the pressure output signal;
(iii) readout means connected for receiving said modified pressure output signal and providing a direct output indication of draw down.

4,142,412

DOPPLER FLOW METER AND METHOD

Francis McLeod, Fort Collins, Colo.; Spencer Silverstein, Ithaca, and Robert Kurtz, New York, both of N.Y., assignors to Sutures Inc., Coventry, Conn.

Filed May 12, 1976, Ser. No. 685,902
Int. Cl.² G01F *1/66*
U.S. Cl. 73—194 A **24 Claims**



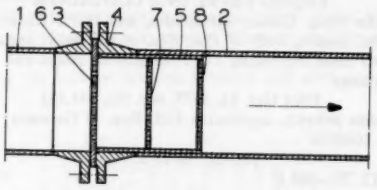
1. A method for measuring the effective velocity of a fluid along a selected axis, the fluid flowing in a conduit, the conduit having one or more regions and the fluid having energy-scattering interfaces, the method comprising the steps of:
transmitting two or more pulsed sound beams at a predetermined angle with respect to each other through the fluid;
detecting at least some of the sound beams reflected by the energy-scattering interfaces in a region in the fluid with one or more receivers, each transmitted pulsed sound beam and each detected sound beam forming a transmitter/receiver group;
repeating the transmitting and receiving steps for each of the one or more fluid regions;
obtaining a Doppler signal which is representative of the velocity vector from each transmitter/receiver group for each region; and
in any order combining the one or more Doppler signals for each transmitter/receiver group of each region into a signal representative of the velocity vector for each transmitter/receiver group, resolving the transmitter/receiver group velocity signals into their component parts along the selected axis, and vectorially combining the signals of the transmitter/receiver groups, thereby obtaining the effective velocity vector in said axis.

4,142,413

DEVICE FOR IMPROVING THE FLOW PROFILE IN A GAS LINE

Hendrik Bellinga, Roden, Netherlands, assignor to N.V. Nederlandse Gasunie, Groningen, Netherlands

Filed Jun. 6, 1977, Ser. No. 803,993
Claims priority, application Netherlands, Jun. 8, 1976, 7606133
Int. Cl.² G01F *15/00*
U.S. Cl. 73—198 **2 Claims**



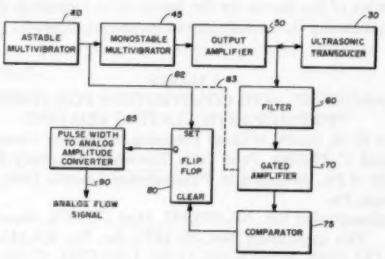
1. A device for improving the flow profile in a gas line ahead of a flow meter, the said device comprising three plates with regularly distributed perforations, said plates being spaced apart parallel to each other at a distance approximately equal to half of the internal diameter of said line and disposed perpendicular to the axis of the line, said perforated plates being mounted in said line with a circumferential sealing in or on a sleeve which can be inserted in said line with a sliding fit, with the total surface area of the perforations in each separate plate equaling 15-25% of the ree sectional area of said line.

4,142,414

ULTRASONIC FLOW METER

Louis C. Cosentino, Wayzata, Minn., assignor to Renal Systems, Inc., Minneapolis, Minn.

Filed Oct. 6, 1977, Ser. No. 839,811
Int. Cl.² G01F *1/66*
U.S. Cl. 73—216 **6 Claims**



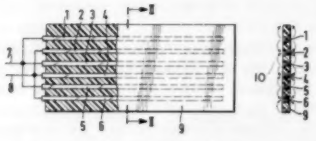
1. An ultrasonic flow meter comprising, a vertical tubular member having an inlet and an outlet in the member with inlet and outlet being adapted to be connected to a liquid flow system, ultrasonic transmitting and receiving transducer means positioned in said vertical tubular member for transmitting and receiving ultrasonic energy through liquid flowing through the member, energizing means connected to said transducer means for causing ultrasonic energy to be transmitted through the liquid in said member, reflector means variably positionable within said tubular member for providing a position proportional to liquid flow rate through said member and for reflecting ultrasonic energy from said transducer means back to said transducer means, said reflector means being provided by an interface between the top surface of the liquid and an air-filled space located within the tubular member above the liquid and defining with the liquid the top of the column, control means

including means for producing at least a single pulse of ultrasonic energy from said transducer to be transmitted through the liquid and for detecting an echo pulse reflected from said reflector means, and means for converting the time between transmission of said ultrasonic pulse and receipt of said echo pulse by said transducer means to a signal proportional to the rate of flow of fluid through said tubular member.

4,142,415
DEVICE FOR CONTINUOUSLY MEASURING THE LIQUID LEVEL IN A CONTAINER

Wilhelm Jung, Giessen-Kleinlinden, and Horst Kister, Wehrheim, Taunus, both of Fed. Rep. of Germany, assignors to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 11, 1977, Ser. No. 841,111
Claims priority, application Fed. Rep. of Germany, Oct. 9, 1976, 2645716
Int. Cl.[2] G01F *23/26*
U.S. Cl. 73—304 C **9 Claims**



1. In a device for continuously measuring the liquid level in a container, wherein a capacitive sensor is disposed in the liquid to be measured and is connected with an oscillator as the frequency controlling element thereof, the improvement comprising:

a capacitive sensor formed of an elongate strip of insulating material having opposite faces, and

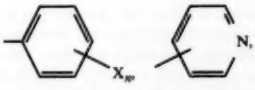
a plurality of elongate conductive elements embedded in the strip of material spaced approximately equidistantly from the opposite faces so that an electric field generated between the conductive elements can be substantially equally effectively acted upon simultaneously on both sides of the device by the liquid to be measured, thereby enhancing the sensitivity of the sensing element.

4,142,416
CARBOXYLIC ACID COMPOSITION FOR FORMING THERMOPARTICULATING COATING

James D. B. Smith, Wilkins Township, Allegheny County, and David C. Phillips, Penn Hills Township, Allegheny County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 690,442, May 27, 1976, abandoned. This application Nov. 25, 1977, Ser. No. 854,944
Int. Cl.[2] G08B *21/00*; G01K *11/00, 1/02*; C08L *67/08*; C09K *1/00*; C08K *5/09*; C08L *63/02, 63/00, 67/00, 67/02*
U.S. Cl. 73—339 R **16 Claims**

1. A room temperature, air-dryable coating composition comprising at least one thermoparticulating carboxylic acid and a solution in an organic solvent of a room temperature, air-dryable polyester or epoxy resinous carrier which is and substantially unreactive with said carboxylic acid and stable when cured, said carboxylic acid having the general formula HOOCR, where R is



or —CHR″R′

where R′ is alkyl to C_{24} or carboxyalkyl to C_{24}, R″ is H or OH, and where each X is independently selected from the group consisting of halogen, nitro, alkyl to C_5, carboxy, and amino, and n is 1 to 5 wherein the amount of said carboxylic acid is about 20 to about 250 phr and the amount of the solvent in said solution is about 25 to about 75% (by weight based on said resinous carrier).

11. A method of protecting electrical apparatus from damage due to overheating and for thereafter determining the location of said overheating, said apparatus including a gas stream and a monitor for detecting particles in said gas stream and for emitting a signal when said particles are detected comprising:

(A) preparing a composition according to claim 1;

(B) applying said composition to said electrical apparatus at positions exposed to said gas stream;

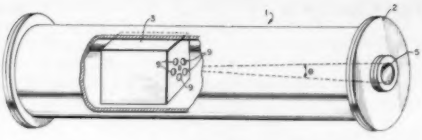
(C) evaporating said solvent; and

(D) monitoring said gas stream for the presence of particles therein.

4,142,417
MULTICHANNEL INFRARED PYROMETER

Kenneth L. Cashdollar, Bethel Park; Martin Hertzberg, and Charles D. Litton, both of Pittsburgh, all of Pa., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Apr. 28, 1978, Ser. No. 901,041
Int. Cl.[2] G01J *5/10*
U.S. Cl. 73—355 R **6 Claims**



1. An infrared pyrometer for simultaneously obtaining measurements to determine both particle and gas temperatures comprising in combination:

an outer generally closed hollow housing having a window facing in the measuring direction;

a second inner housing located within said outer housing and having an infrared detector/amplifier assembly therein;

and said detector/amplifier assembly comprising at least four separate infrared detectors each having its own filter and being responsive to a discrete infrared wavelength that is different for each detector, at least three of said detectors being used to obtain readings for determining particle temperatures, said assembly also having amplifier circuit means including said detector for electronically indicating the receipt of the radiaition at the discrete infrared wavelength at each detector to output a signal which is linearly proportional to the magnitude of the input radiation.

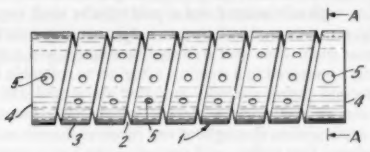
4,142,418
TEMPERATURE SENSITIVE MEMBER

Gunnar Lagher, Kumlevägen 5 A, Fjälkinge, Sweden (S-290 34)

Filed Mar. 28, 1978, Ser. No. 891,025
Claims priority, application Sweden, Apr. 5, 1977, 7703939
Int. Cl.[2] G01K *5/66, 5/68*
U.S. Cl. 73—363.9 **9 Claims**

1. A temperature sensitive member of a two-material type, wherein the improvement comprises an elongated metal strip having a plurality of holes formed therethrough over the length of said strip, a layer of polymer material coated on said

metal strip with the polymer material extending into and secured within the holes in said strip, said polymer material



having a significantly different coefficient of expansion than said metal strip.

4,142,419

SENSING DEVICE FOR LIQUIDS

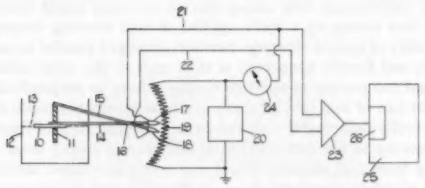
Ivor Fenne, Greenford, and Paul Lakra, Wembley, both of England, assignors to Lucas Industries Limited, Birmingham, England

Filed Oct. 25, 1977, Ser. No. 845,368

Claims priority, application United Kingdom, Nov. 6, 1976, 46270/76

Int. Cl.[2] G01N *9/12*

U.S. Cl. 73—440 **1 Claim**



1. A device for indicating changes in the specific gravity of a liquid, comprising first and second floats adapted to float on the surface of said liquid, the shapes and/or densities of said floats being so arranged that the depths to which said floats are immersed in said liquid relative to one another change in response to changes in said specific gravity, means for producing an electrical signal dependent upon the depths to which said floats are immersed relative to one another, said means comprising electrical means for producing a first voltage dependent upon the height of a predetermined point on said first float relative to a given leval and a second voltage dependent upon the height of a predetermined point on said second float relative to said given level, said electrical signal being provided by the differences between said first and second voltages, a differential amplifier receiving said first and second voltages as imputs and providing said electrical signal, said electrical means comprising a voltage divider including a resistor and a pair of wipers slidable therealong, each wiper being connected to said predetermined point on a respective one of said floats such that a change in height of said predetermined point in use causes the associate wiper to slide along said resistor, and indicating means connected between one of said slides and one end of said resistor for providing an indication of the liquid level in said tank.

4,142,420

METHOD FOR ELECTRICALLY CALIBRATING THE OUTPUT OF PRESSURE TRANSDUCERS

Shinichi Maeda, Kariya, and Katsuhiko Oiwa, Handa, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Mar. 2, 1978, Ser. No. 882,924

Claims priority, application Japan, May 2, 1977, 51-04077

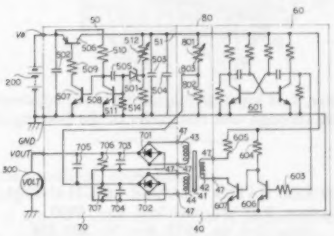
Int. Cl.[2] G01L *9/10*

U.S. Cl. 73—728 **3 Claims**

1. In combination with a pressure transducer in which assembled are a housing forming a chamber therein, a pressure responsive member supported in said chamber to move in response to the pressure exerting thereon, a differential transformer associated with said pressure responsive member such that the relative position between a core and a primary and secondary windings of the former is varied in response to the movement of the latter, an oscillation circuit connected to said primary winding to excite said primary windings periodically, and a conversion circuit connected to said secondary windings to convert a.c. voltages produced by said secondary windings into a d.c. output voltage, a method for calibrating the output of said pressure transducer comprising the steps of:

providing a pressure source and a calibration circuit which respectively produce a constant reference pressure and a d.c. calibrating voltage;

varying the relative position between said core and said



windings of said transformer, with said chamber being communicated with said pressure source and with said conversion circuit being disconnected from said calibration circuit, such that said d.c. output voltage of said conversion circuit deviates from the reference zero voltage in a polarity opposite to that of said d.c. calibrating voltage in response to said constant reference pressure;

varying said d.c. calibrating voltage, with said chamber being communicated with said pressure source and with said conversion circuit being connected to said calibration circuit, such that said d.c. output voltage deviated in said position varying step is varied by said d.c. calibrating voltage; and

fixing said d.c. calibrating voltage to a value by which said d.c. output voltage is calibrated to said reference zero voltage.

4,142,421

TRANSMISSION ARRANGEMENT

W. Gene Stevens, Dunlap, and Raymond P. Cobb, Washington, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Sep. 6, 1977, Ser. No. 831,018

Int. Cl.[2] F16H *37/00*; F02B *77/00*

U.S. Cl. 74—15.63 **16 Claims**

1. A transmission arrangement for a vehicle having a front end and a rear end corresponding to a normal longitudinal direction of movement, comprising:

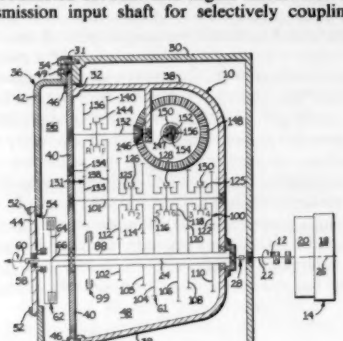
a housing assembly having a rear cover, said housing assembly being mounted on said rear end of the vehicle;

a tubular transmission input shaft supported substantially within said housing assembly;

an engine driven shaft extending through said transmission input shaft; and

input clutch means disposed within said housing assembly

and connected between said engine driven shaft and said transmission input shaft for selectively coupling them



together, said input clutch means being adjacent and accessible through said rear cover of the housing assembly.

4,142,422

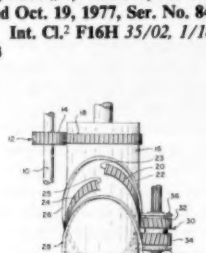
SPEED RATIO CHANGE MECHANISM

Fred F. Haefner, R.D. #4, Wexford, Pa. 15090

Filed Oct. 19, 1977, Ser. No. 843,598

Int. Cl.[2] F16H *35/02, 1/18*

U.S. Cl. 74—393 **4 Claims**



1. A gear train for transmitting power to a higher angular speed comprising:

a pinion gear having spur teeth; an intermediate gear of constant diameter and having a first spur toothed portion for meshing with the pinion gear and a second helically toothed portion on a flight path axially moving toward and away from the spur toothed portion, the spur toothed portion and the helical toothed portion having the same diametrical pitch; and a third gear of the same diameter as the pinion gear and adapted to engage the helical toothed portions of the intermediate gear.

4,142,423

SHOCK ABSORBING DEVICE

Kazuo Ikawa, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

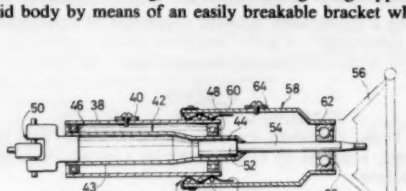
Continuation of Ser. No. 715,833, Aug. 19, 1976, abandoned. This application Dec. 6, 1977, Ser. No. 858,009

Claims priority, application Japan, Aug. 20, 1975, 50-100219

Int. Cl.[2] B62D *1/18*

U.S. Cl. 74—492 **2 Claims**

1. In combination a steering system and an impact absorbing means for use therewith for a motor vehicle having a body, comprising a first casing securely connected to said body and having an end portion which has substantially uniform cross section throughout; a tubular shaft rotatably received in said first casing and having first and second ends, said first end being coupled through a steering linkage to steered road wheels of said vehicle; a stub shaft having a first end in splined connection with said second end of said tubular shaft to permit telescopic movement therebetween while causing rotation of said tubular shaft when said stub shaft is rotated, and a second end fixedly connected to a steering wheel to be rotatable therewith; a second casing spacedly mounted about said stub shaft and having an end portion thereof which has substantially uniform cross section throughout and receives therein said end portion of said first casing, said second casing being supported by said body by means of an easily breakable bracket which



36

permits the rotation of said stub shaft therein and to telescopically receive said first casing therein on being urged toward said first casing by a force applied to said steering wheel; a plurality of spaced elongate members arranged parallel to each other and fixedly connected at their ends to the outer surface of said end portion of said first casing so as to be perpendicular to the axis of said tubular shaft; and a strap member made of a plastically deformable material having one end thereof fixedly connected to the end portion of said second casing most remote from said steering wheel and being interlaced through said elongate members so as to be subjected to successive plastic deformation when said second casing is driven toward said first casing by a force applied to said steering wheel.

4,142,424

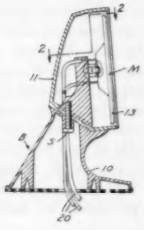
REMOTE CONTROL MIRROR

Donald R. Klein, Greenville, Ohio, assignor to Sheller-Globe Corporation, Toledo, Ohio

Filed Sep. 29, 1977, Ser. No. 837,811

Int. Cl.[2] F16C *1/10*

U.S. Cl. 74—501 M **4 Claims**



1. In a remote control mirror, the combination comprising

a mirror support,

a base,

a trunnion,

interengaging means between the trunnion and the base limiting the pivotal movement of the trunnion with respect to the base in a single plane about a first axis,

interengaging means between the trunnion and mirror support limiting the pivotal movement of the mirror support with respect to the trunnion about a second axis at a right angle to the first mentioned axis,

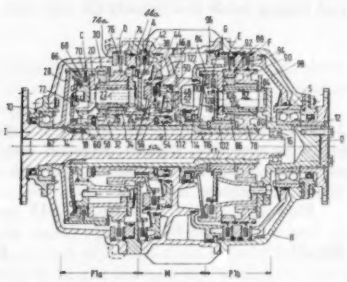
and means acting on said mirror back for selectively moving

said mirror back into any desired position by the combined pivotal movement about each of said axes,
said first-mentioned interengaging means comprising spaced pairs of angularly related flat surfaces,
said trunnion having spaced arcuate surfaces engaging said spaced pairs of surfaces.

4,142,425
MULTIPLE SPEED DOUBLE PLANETARY GEAR TRANSMISSION

Karl G. Ahlen, Bromma; Per-Olof Bergstrom, Ektorp, and Joseph Supanich, Stockholm, all of Sweden, assignors to S.R.M. Hydromekanik Aktiebolag, Stockholm-Vallingby, Sweden

Filed Aug. 26, 1976, Ser. No. 718,015
Claims priority, application United Kingdom, Jan. 29, 1976, 3572/76; Fed. Rep. of Germany, May 10, 1976, 2619500
Int. Cl.[2] F16H *57/10*
U.S. Cl. 74—760 **25 Claims**

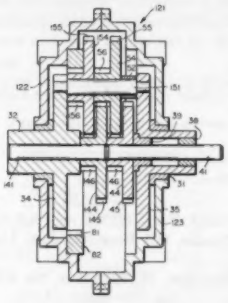


1. A multiple speed gear transmission comprising:
a stationary casing, first and second planetary gear arrangements, each having an input member and an output member, said planetary gear arrangements connected in series with the output member of the first planetary gear arrangement drivingly engaged with the input member of the second planetary gear arrangement,
each such arrangement including; a planet carrier carrying a planet gear shaft and at least two gear surfaces of different diameters thereon, said planetary gear carrier engaging with said output member, a drive annular gear for engaging the input member, and at least two remaining annular gears also in engagement with the planet gear surfaces, a friction brake and a corresponding servo-motor associated with each of said remaining annular gears, the first planetary gear arrangement including a direct drive friction clutch and including a servo-motor for operating same, all of said friction brakes and said friction clutch being the disc type, said servo-motors being stationarily mounted against rotation in the stationary casing, and each servo-motor associated with a friction brake being operable to engage its said friction brake to close it to fix its respective annular gear against rotation relative to the casing, and a lever positioned to engage the direct drive friction clutch to close it, and thrust bearings operatively located between the direct drive friction clutch and its respective servo-motor, said direct drive servo-motor transmitting its force across the thrust bearings to turn the lever to cause engagement of the direct drive friction clutch.

4,142,426
HYPOTROCHOIDAL PLANETARY GEAR SPEED CHANGERS

Sandor J. Baranyi, Ithaca, N.Y., assignor to Trochoidal Gear Technology, Inc., Ithaca, N.Y.

Filed Oct. 26, 1976, Ser. No. 735,386
Int. Cl.[2] F16H *1/28*
U.S. Cl. 74—801 **10 Claims**



1. A speed changer, comprising
a housing
a pair of spaced cylindrical members journaled in opposite ends, respectively, of said housing to rotate coaxially about a common axis,
a pair of spaced carrier plates projecting from the inner ends of said members for rotation in a chamber in said housing,
a plurality of spaced shafts extending between confronting surfaces on said plates parallel to said axis, and equispaced radially of, and angularly about, said axis, and operatively connecting said plates and said members for rotation in unison about said axis,
an internal sun gear secured in said chamber,
a first group of multi-step planetary cluster gears rotatably mounted on said shafts and each having thereon at least two axially spaced sets of teeth of respectively different pitch diameters, the teeth of one set thereof being drivingly engaged with the teeth of said sun gear,
a third cylindrical member extending through one end of said housing for rotation coaxially of said axis, and
a further gear secured to the inner end of said third cylindrical member and having at least one set of teeth thereon drivingly engaged with the teeth of another set of teeth on each of said first group of planetary gears, whereby rotation of said further gear imparts rotation through said planetary and said sun gears to said cylindrical members.

4,142,427
PRESSURE SENSITIVE CONTROL OF INPUT PRESSURE TO TRANSMISSION VACUUM MODULATOR

John D. Grevich, 32011 S. Coast Hwy., South Laguna, Calif. 92677

Filed Jul. 20, 1977, Ser. No. 817,360
Int. Cl.[2] B60K *41/18*; F02B *33/00*
U.S. Cl. 74—863 **10 Claims**

1. An accessory for a vehicle having an automatic transmission vacuum modulator control unit, an engine with an intake manifold, and means for causing the intake manifold pressure to temporarily exceed atmospheric pressure, the intake manifold and the control unit respectively having a source port and a load port for use in coupling the intake manifold to the control unit, the accessory comprising:
controllable means for normally providing a communication path for use in coupling the source port to the load port; and
pressure comparison means responsive to the intake mani-

fold pressure and to a reference pressure for causing the controllable means to interrupt the communication path

when the intake manifold pressure exceeds the reference pressure.

4,142,428
TIRE PATCHING APPARATUS
Edmund V. Vielman, 661 Fern Meadow, Universal City, Tex. 78148
Filed Jan. 18, 1978, Ser. No. 870,282
Int. Cl.[2] B60C *25/16*
U.S. Cl. 81—15.5 **3 Claims**

1. Tire patching apparatus comprising a gun-shaped adhesive injector incuding a hollow handle communicating with a tubular barrel; an adhesive chamber defined by walls of said handle and by a lever pivoted to the inner end of said barrel; a trigger operatively coupled to said lever for forcing adhesive out of said barrel; a resilient patch adapted to enter into a hole in a tire; said patch including a tubular rear portion fitting in said barrel for injection into said hole by pressure of adhesive being squeezed out of said barrel and a flanged front end; and means on said injector for retaining said patch while said patch enters said hole.

4,142,429
INTERNAL TUBE CUTTER
Robert L. Wilkins, Greensburg, and Donald E. Skoczylas, Monroeville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Oct. 28, 1977, Ser. No. 846,468
Int. Cl.[2] B23B *3/04, 5/04;* E21B *29/00*
U.S. Cl. 82—82 **9 Claims**

1. An internal tube cutter comprising:

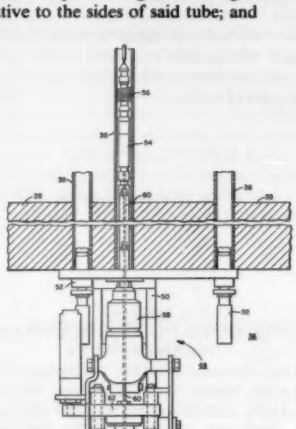
a frame having locking mechanisms attached thereto for engaging a member and supporting said frame from said member;

a flexible shaft associated with said frame and capable of being disposed within said tube;

a plurality of cutting heads pivotally disposed within said flexible shaft for cutting said tube when extended and rotated;

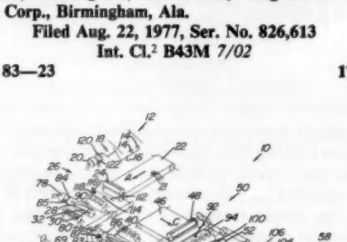
engagement means disposed within said flexible shaft for extending said cutting heads into contact with the inside of said tube and for rotating said cutting heads;

a flexible transverse positioning mechanism mounted on said flexible shaft for positioning said cutting heads within said tube relative to the sides of said tube; and



drive means mounted on said frame and attached to said cutting heads for rotating said cutting heads thereby causing said cutting heads to internally cut said tube.

4,142,430
ENVELOPE OPENER
William J. Long; Charles A. Long, Jr.; Robert L. Babanats, all of Birmingham; Larry W. Roberts, Fairfield, and H. Ross Williams, Birmingham, all of Ala., assignors to Amer-O-Matic Corp., Birmingham, Ala.
Filed Aug. 22, 1977, Ser. No. 826,613
Int. Cl.[2] B43M *7/02*
U.S. Cl. 83—23 **17 Claims**



15. A method of automatically opening an envelope, comprising:

(a) automatically transporting at least one envelope from a feed station to a delivery point,

(b) automatically aligning the envelope as it is being transported between said feed station and delivery point by contacting an edge thereof and then shearing the contacted edge,

(c) cyclicly repeating step (b) to successively shear at least three edges of the envelope one edge at a time,

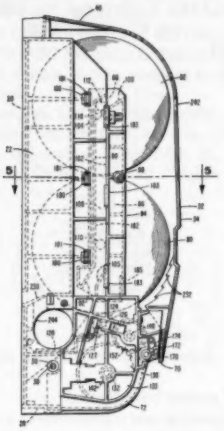
(d) automatically monitoring the advance of said envelope from the feed station to the delivery point, and

(e) automatically detecting whether said envelope has advanced a preselected distance over at least one preselected interval of time and automatically inhibiting said steps (a)-(c).

4,142,431
RESERVE ROLL FEED MECHANISM FOR DISPENSER FOR FLEXIBLE SHEET MATERIAL

Paul W. Jespersen, Houston, Tex., assignor to Georgia-Pacific Corporation, Portland, Oreg.

Filed Apr. 29, 1977, Ser. No. 792,307
Int. Cl.[2] B65H *35/08*
U.S. Cl. 83—335 5 Claims



1. A dispenser for dispensing rolls of flexible sheet material mounted on a spool extending outwardly of the width of said rolls, comprising:

(a) a chassis;

(b) support means operatively connected to said chassis for rotatably supporting a roll of flexible sheet material to rotate and move downwardly relative to said support means;

(c) guide means operatively connected to said chassis for guiding a web of flexible sheet material from said roll to a position to be grasped by a user so that the user may pull the web out of the dispenser;

(d) a rotatable perforating mechanism operatively connected to said chassis for perforating said web at intervals therealong to divide the web into individual sheets; and

(e) means included as part of said support means for urging said roll of flexible sheet material to rotate downwardly relative to said support means toward said perforating mechanism, regardless of the amount of sheet material remaining on said roll, said latter means including generally vertically extending guide tracks adapted to rotatably support said roll of sheet material by engaging the outwardly extending end portions of said spool, and means on at least one of said tracks engaging said outwardly extending portions to cause downward rotational movement thereof when said spool is rotated in a first direction.

4,142,432
ELECTRONIC MUSICAL INSTRUMENT

Seiji Kameyama, and Hironori Watanabe, both of Hamamatsu, Japan, assignors to Kabushiki Kaisha Kawai Gakki Seisakusho, Hamamatsu, Japan

Filed Mar. 1, 1977, Ser. No. 773,303
Claims priority, application Japan, Apr. 28, 1976, 51/49272
Int. Cl.[2] G10H *1/02, 5/02*
U.S. Cl. 84—1.01 8 Claims

1. A method of electronically producing music in an electronic musical instrument having keys to select musical notes, by carrying out a waveshape computation cycle, a waveshape transmission cycle and an envelope load output cycle, wherein;

said waveshape computation cycle comprises the steps of:

coding the fundamental cosine wave corresponding to a selected key into a digital signal:

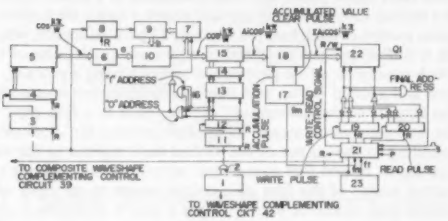
storing the digital signal in a memory;

sequentially computing the n powers of the cosine wave and the coefficients related to the harmonic components of the fundamental of the cosine wave, wherein n is a number up to the maximum harmonic order necessary to produce the musical notes;

accumulating the information computed in the form of the sum of the products of the n powers of the fundamental of the cosine wave and the coefficients to obtain a musical waveshape, and

storing the musical waveshape in a composite waveshape memory;

said waveshape transmission cycle comprises the steps of:



reading out at high speed the waveshape stored in the composite waveshape memory;

writing the waveshape into another composite waveshape memory while storing a new musical waveshape, the waveshape being readout at a speed N times the fundamental frequency of a selected key, wherein N is at least twice the maximum harmonic order, and

complementing the waveshapes while they are read out by gradually increasing the new musical waveshape and gradually decreasing the previous musical waveshape;

said envelope load output cycle comprising the steps of:

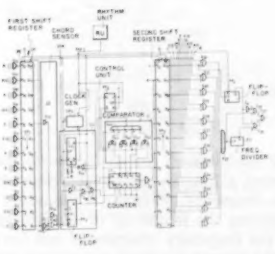
subjecting the readout waveshapes from the waveshape transmission cycle to amplitude modulation effects, complement conversion and digital analog conversion, and

providing the waveshapes to an output sound system to produce music.

4,142,433
AUTOMATIC BASS CHORD SYSTEM

Ulrich Gross, Aachen, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 2, 1976, Ser. No. 719,988
Claims priority, application Fed. Rep. of Germany, Sep. 9, 1975, 2539950
Int. Cl.[2] G10F *1/00*
U.S. Cl. 84—1.03 10 Claims



1. A device for automatically playing a tonal accompaniment in electronic musical instruments equipped with key switches and a rhythm unit, at least one tone of a chord being

held as a chord pattern and becoming available in a predetermined sequence in the selected rhythm, said device comprising, a first 12-bit shift register connected in a ring and having plural inputs and plural outputs, means coupling the key switches of a given octave to the inputs of the first shift register, the chord pattern being stored in the first shift register upon receipt of each bass pulse of the rhythm unit, a chord sensor which determines the chord type and has plural inputs and an output, means for coupling those outputs of the first shift register, to which the tones of the chords of a single key to be reproduced correspond, to the inputs of the chord sensor, a second 12-bit shift register connected in a ring and having a plurality of parallel inputs and plural outputs each corresponding to one tone of an octave, a high frequency clock generator having an output connected to a clock input of the first 12-bit shift register for shifting the chord pattern one position further with each clock pulse, and also connected to a clock input of the second 12-bit shift register into which a single bit is entered upon receipt of each bass pulse via its 12 parallel inputs, which bit is shifted one position further with each clock pulse of the clock generator, a first gate circuit means having a plurality of first and second inputs and output means, means connecting the outputs of the second shift register each to a first input of the first gate circuit means, means for applying the tone corresponding to the output of the second shift register to the second inputs of said first gate circuit means, means coupling the output means of the first gate circuit means to an input of a second gate circuit at whose output a tone is available, a control section connected to the high frequency clock generator and to the output of the chord sensor, the clock input of the first 12-bit shift register being disconnected from the high frequency clock generator when a chord is detected, means for applying the rhythm unit bass pulses to a first input of the high frequency clock generator which is thereby rendered operative, and means coupling the control section to the high frequency clock generator so as to make the clock generator inoperative as soon as the bit in the second 12-bit shift register reaches the position which corresponds to the desired tone in the key which is dictated by the chord.

4,142,434

CIRCUIT ARRANGEMENT FOR ELECTRONIC MUSICAL INSTRUMENTS

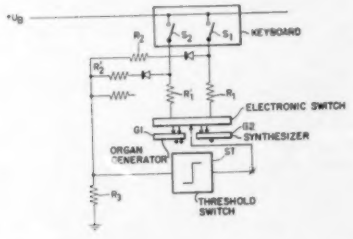
Ulrich Gross, Aachen, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 17, 1975, Ser. No. 596,592

Claims priority, application Fed. Rep. of Germany, Jul. 23, 1974, 2435346

Int. Cl.² G10H *1/02, 5/06*

U.S. Cl. 84—1.01 **2 Claims**



1. A circuit arrangement for an electronic musical instrument comprising a first frequency generator and a second signal-variable frequency generator, a frequency comparator, means for applying the frequency of the first generator to a first input of the frequency comparator and for applying the frequency of the second generator to a second input thereof, a control device connected to the output of the frequency comparator and to a control input of the second generator for setting the second generator to a frequency corresponding to that of the first generator, a keyboard connected to said first and second generators for selecting the frequencies thereof, and means for optionally disconnecting the keyboard from one of the two generators.

4,142,435

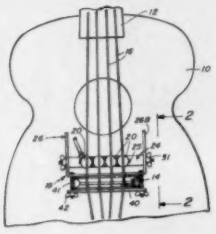
PICKUP ASSEMBLY FOR STRINGED INSTRUMENT

Cleve F. Pozar, 125 Green St., Cambridge, Mass. 02139

Filed Oct. 3, 1977, Ser. No. 838,627

Int. Cl.² G10H *3/08*

U.S. Cl. 84—1.15 **14 Claims**



1. A pickup assembly for a stringed musical instrument comprising;

a plurality of pickup transducers,

means for supporting said transducers in a spaced array with a transducer associated with a corresponding string,

and means for mounting said transducer supporting means from the bridge of the instrument with the transducers disposed intermediate the instrument body and strings,

said means for supporting including means for releasably supporting each transducer permitting the transducer to be moveable along the associated string and locked in any one of a number of positions along the string.

4,142,436

METHOD OF PLAYING STRINGED MUSICAL INSTRUMENT

Emmett H. Chapman, 8320 Yucca Trail, Los Angeles, Calif. 90046

Continuation of Ser. No. 552,080, Feb. 28, 1975, abandoned, which is a division of Ser. No. 457,396, Apr. 3, 1974, Pat. No. 3,868,880, which is a division of Ser. No. 334,859, Feb. 22, 1973, Pat. No. 3,833,751. This application Nov. 30, 1976, Ser. No. 746,027

Int. Cl.² G10D *3/06*; G10H *3/08*

U.S. Cl. 84—1.16 **4 Claims**

1. A method of playing by a performer a musical instrument of a type comprising a fretted fingerboard with fixed frets, a plurality of tensioned strings extending in adjacent spaced

relation to the fretted fingerboard, and string tensioning means, said method being the playing of the said instrument by a performer substantially exclusively by engaging the strings directly by the fingers, the engaging being by tapping by fingers of both hands substantially simultaneously the said strings and holding said strings against selected frets by fingers of both hands.

4,142,437

ENVELOPE CIRCUIT FOR A KEYBOARD TYPE ELECTRONIC MUSICAL INSTRUMENT

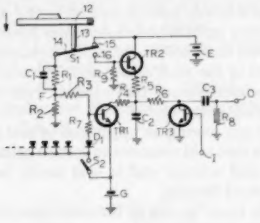
Ikutaro Kakehasi, Osaka, Japan, assignor to Roland Corporation, Osaki, Japan

Continuation of Ser. No. 656,695, Feb. 9, 1976, abandoned. This application Jul. 19, 1977, Ser. No. 817,019

Claims priority, application Japan, Mar. 31, 1975, 50-39665

Int. Cl.[2] G10H *1/02;* **307** *263;264;292*

U.S. Cl. 84—1.24 **5 Claims**



1. In a keyboard type of electronic musical instrument, a plurality of envelope circuits having a damping and sustain characteristic and each comprising a keyswitch operated in association with the actuation of a key on the keyboard of the electronic musical instrument, a power supply, a voltage responsive circuit coupled to said power supply for producing an output tone, the volume of which decreases as the magnitude of the voltage applied thereto decreases, a sustain circuit means coupled to said voltage responsive circuit for causing the operation of said voltage responsive circuit to continue, a time constant circuit means having a first resistance having a first terminal connected to said keyswitch and a second terminal and a first capacitance having a first terminal connected to the first terminal of said first resistance and to said keyswitch and a second terminal connected to the second terminal of said first resistance, said first capacitance being coupled to said power supply in the normal position of said keyswitch for being charged thereby and being coupled to said voltage responsive circuit when said keyswitch is in the other position with the key actuated for delivering a decreasing voltage to said voltage responsive circuit, the initial magnitude of which is proportional to the time which said keyswitch takes to move from the normal position to the other position, a second resistance connected between the junction of the second terminals of said first resistance and said first capacitance and said sustain circuit means in series with said first resistance for providing a voltage to said sustain circuit means when said keyswitch moves away from said other position toward said normal position when the key is released for causing said sustain circuit means to deenergize said voltage responsive circuit, third resistance connected between the junction of the second terminals of said first resistance and said first capacitance and ground, a single sustain switch for all said envelope circuits connected in parallel to said sustain circuit means in each envelope circuit for bypassing said voltage supplied to said sustain circuit means from said time constant circuit when said sustain switch means is closed for making said sustain circuit means inoperative to deenergize said voltage responsive circuit, and reverse current flow preventing means for each sustain circuit means connected between the sustain circuit means and said sustain switch for preventing reverse current flow from individual sustain circuit means into other sustain circuit means, whereby said voltage responsive circuit continues to produce an output tone.

4,142,438

MOUNT FOR HARMONICA REED OR THE LIKE

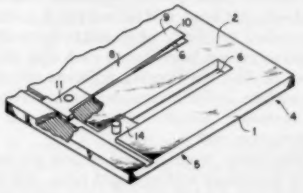
Martin Ehler, Trossingen, Fed. Rep. of Germany, assignor to Matth. Hohner AG, Trossingen, Fed. Rep. of Germany

Filed Mar. 3, 1978, Ser. No. 883,048

Claims priority, application Fed. Rep. of Germany, Mar. 5, 1977, 7706803; Switzerland, Mar. 8, 1977, 00284/77

Int. Cl.[2] G10B *3/00*

U.S. Cl. 84—360 **15 Claims**



1. A reedboard for a reed type musical instrument, comprising:

an elongated flat reed having a free end portion and a mounting end portion both of generally the same reed width;

a reed support plate formed with

a pair of transversely spaced and longtitudinally extending edge portions,

a pair of longitudinally spaced and transversely extending web portions forming with said edge portions a window of a window width generally equal to said reed width, said window being adapted to receive reed-vibrating air flow therethrough,

a substantially planar face defining a reed receiving surface of said support plate, and

a groove formed at one of said edge portions, opening at said face, extending transversely from said window, having a groove width substantially equal to said reed width, and having a substantially planar base surface inclined away from said window to said face; and means for securing said mounting portion in said groove on said surface thereof with said free end portion in registration over said window and spaced remote from said mounting end portion above said face.

4,142,439

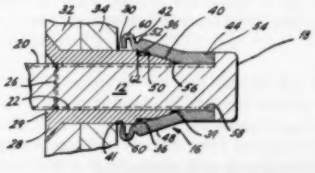
BLIND FASTENER ASSEMBLY

Richard C. Landt, Souderton, Pa., assignor to SPS Technologies, Inc., Jenkintown, Pa.

Filed Aug. 29, 1977, Ser. No. 828,704

Int. Cl.[2] F16B *13/06, 13/10*

U.S. Cl. 85—70 **27 Claims**



1. A blind fastener assembly for installation in a workpiece having a first and a second surface with an opening therethrough, said assembly comprising:

a pin member including an enlarged head at one end thereof

formed to be placed adjacent the second workpiece surface, an elongated shank portion extending from said enlarged head and means on said shank portion operative to advance said pin member in a direction along its longitudinal axis;

expander means including an enlarged head at one end thereof formed to bear upon the first workpiece surface, a tapered surface of varying radial thickness in a longitudinal direction adjacent the other end thereof, said tapered surface varying from a minimum radial thickness at said other end to a maximum radial thickness at a locus of points spaced from said other end, a shoulder between said enlarged head and said tapered surface, a first shank portion extending from said tapered surface to said shoulder, and a second shank portion extending from said shoulder to said enlarged head, said second shank portion having an outer surface formed to be placed in the workpiece opening and to extend therebeyond such that said shoulder is located beyond the opening adjacent the second workpiece surface, and said expander means having an internal bore extending therethrough carrying said pin member shank portion; and

expandable sleeve means carried on said pin member shank portion proximate said enlarged head, said sleeve means including a first portion of greater radial thickness adjacent one end thereof proximate said pin member enlarged head and a second portion of reduced radial thickness adjacent the other end thereof juxtaposed from said minimum thickness end of said expander means tapered surface, said sleeve second portion being adapted to be advanced along said expander means tapered surface and said first shank portion and expanded thereover upon advancement of said pin member toward said shoulder, said other end of said sleeve means ultimately contacting said shoulder and forming a radially outwardly extending bulb with its apex intermediate the ends of said sleeve means second portion, said bulb thereafter advancing over said shoulder and along said expander means second shank portion until it contacts and bears against the second workpiece surface.

4,142,440

EXPANSION PLUG

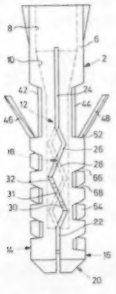
Arnold Schefer, Höhenweg 396, Kappel, Switzerland

Filed Jul. 6, 1977, Ser. No. 813,252

Claims priority, application Switzerland, Jul. 7, 1976, 8679/76; Apr. 19, 1977, 5069/77

Int. Cl.[2] F16B *13/06*

U.S. Cl. 85—83 **17 Claims**



1. An expansion plug comprising

a pair of expansion shanks separated by at least one slit which extends along most of the length of the plug;

a receiving channel for a fastener extending along the longitudinal axis of the plug;

each shank having a plurality of teeth formed by indentations in its outer profile to anchor the plug in receiving material; and

frangible wall means connecting said shanks across said slit, said well means being relatively long and narrow, the longitudinal axis of said wall means extending generally along the length of the plug, and said wall means comprising thin wall portions arranged on opposite longitudinal sides of said receiving channel so that said channel extends between opposed ones of said wall portions.

4,142,441

CENTERFIRE CARTRIDGE PRIMING TOOL

Gordon N. Schaenzer, 11737 N. Solar Ave., Mequon, Wis. 53092

Filed Sep. 12, 1977, Ser. No. 832,294

Int. Cl.[2] F42B *33/00*

U.S. Cl. 86—24 **3 Claims**

1. A hand held shell priming tool for forcing a primer into a shell casing including :

an injection molded plastic tool body having an upper portion and a lower portion and including a cavity;

a shell holder embedded in said upper portion of said plastic body, said shell holder including a chamber for holding a base end of the shell casing and a central bore for receiving a primer therein that extends from said chamber to said cavity in the body;

a shiftable pin having an upper end in said central bore and shiftable into said chamber to force a primer into said shell casing, and a lower end in said cavity having a concave seat formed therein;

a pivotable lever having an inner end pivotally connected to said body adjacent said upper portion, and an outer end movable inwardly toward the lower portion of said body.

said inner end of said lever including an integrally projecting cam lug extending into said cavity in said body and positioned generally beneath said pin, said cam lug having a complementary concave seat formed therein opposite the lower end of said pin, which cam lug moves upwardly in a generally arcuate path when the outer end of the lever is moved inwardly; and

ball means retained between engaged by the complementary concave seats of said pin and said cam lug so that as the lever is moved inwardly toward the tool body and the cam lug moves upwardly along its arcuate path an upward force is imparted by the ball means to the pin to force a primer into the shell casing.

4,142,442

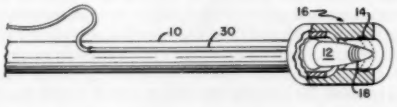
DIGITAL FUZE

William J. Tuten, Richmond, Ind., assignor to Avco Corporation, Wilmington, Mass.

Filed Dec. 8, 1971, Ser. No. 205,939

Int. Cl.[2] F42C *17/00*

U.S. Cl. 89—6.5 **13 Claims**



1. In an ordnance fuze including a binary counter having a plurality of bit positions, means for setting a binary number into the bit positions of said counter, said number being the delay time of said fuze, means for counting down said counter until said number is reached, and means responsive to the reaching of said number for generating a detonation signal, said means for setting said binary number into said counter comprising in combination:

generator means for generating selected ones of a plurality of discrete frequencies, each of said frequencies representing a given bit position in a binary number, the presence or

absence of such frequencies representing a "1" or a "0" in respective bit positions of a particular binary number;

a transmitter for transmitting said discrete frequencies;

a receiver remote from said transmitter and associated with said fuze for receiving said transmitted discrete frequencies;

means in said receiver for separating said discrete frequencies;

means responsive to each of said separated received frequencies for generating an output signal, the presence or absence of an output signal representing a "1" or a "0" in a respective bit position of said particular binary number; and

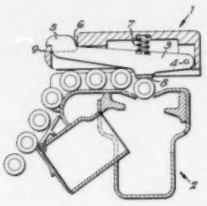
means for applying each of said output signals to a respective bit position in said binary counter of said fuze for simultaneously setting all of the bits of said binary number into the bit positions of said counter.

4,142,443

VISUAL CHECKING DEVICE FOR MACHINE GUNS AND SIMILAR WEAPONS

Maurice V. Bourlet, Liége, Belgium, assignor to Fabrique Nationale Herstal S.A., Herstal, Belgium

Filed Apr. 18, 1977, Ser. No. 788,341
Claims priority, application Belgium, Jun. 23, 1976, 255132
Int. Cl.[2] F41D *9/02*
U.S. Cl. 89—33 R **1 Claim**



1. A visual checking device for a machine gun having a feed channel for directing successive cartridges to a firing chamber, said checking device comprising:

a lever pivotally mounted over said feed channel;

biasing means urging said lever to swing toward said channel to project at least a lower portion of said lever into said channel adjacent said chamber to a first position when a cartridge in said channel is engaged thereby or a second position when there is no cartridge therein;

a second portion of said lever being visible from the exterior of said gun to indicate whether said lever is in said first or second position;

a cover over said channel, said lever being below said cover and said biasing means being a spring between and reacting against said cover and lever;

said lower portion of said lever comprising a downwardly projecting pad on said lever directly opposite the region of contact between said spring and lever; and

said second portion of said lever being a visible pointer movable in a slot in said cover.

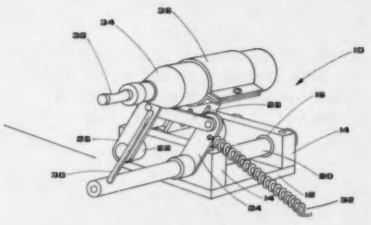
4,142,444

AUTOMATIC TRIMMING DEVICE FOR LAMINATED BOARDS

Harold E. Draper, 3080 Hwy. 94 North, St. Charles, Mo. 63301, assignor to Michael Draper and Harold Elmer Draper, Jr., both of St. Charles, Mo.

Filed Oct. 14, 1977, Ser. No. 842,125
Int. Cl.[2] B23C *1/027*; B27C *5/00*
U.S. Cl. 90—15 R **5 Claims**

1. An automatic trimming device for laminated board forming machines in which laminated plastic is attached to particle board and the like with excess plastic laminate extending downwardly from the lower face of the particle board, comprising an automatic trimming device for the excess plastic laminate including a housing having spaced pivotally mounted shafts which are linked together for simultaneous movement, one of the shafts having a feeler element extending normal therefrom for engaging the lower face of the particle board, the other shaft having means for mounting a trimming device relative to the excess plastic laminate extending downwardly from the lower face of the particle board, the top of the feeler



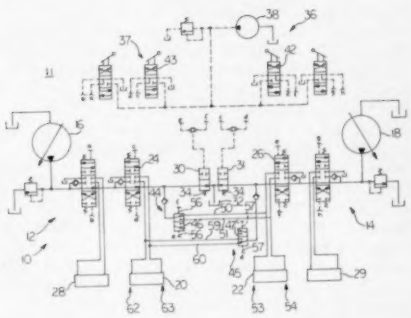
element being in general vertical and horizontal alignment with the trimming device, and spring means attached between the pivotally mounted shaft linkage and the laminated board forming machine to position the feeler element against the lower face of the particle board, whereby when the feeler element is engaged by the lower face of the particle board, the trimming device is simultaneously raised or lowered in vertical and horizontal alignment relative to the feeler element.

4,142,445

CROSSOVER PLURAL CIRCUIT FLUID SYSTEM

Kenneth R. Lohbauer, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Mar. 17, 1977, Ser. No. 778,650
Int. Cl.[2] F01B *25/02*
U.S. Cl. 91—6 **6 Claims**



1. In a fluid system having at least first and second circuits each connected to a pressure fluid source, each circuit having at least one preselected work element connected to the fluid source through a respective preselected controlling valve, the improvement comprising:

a fluid reservoir;

a first blocker valve connected on one side to the fluid reservoir and on the other side to the first circuit at a location downstream of the preselected controlling valve of the first circuit, said first blocker valve being movable between a first position at which the first circuit is in fluid communication with the reservoir and a second position at which communication of the first circuit is blocked from said reservoir, said first blocker valve being biased toward said first position;

first moving means for moving said first blocker valve to the

second position in response to actuating the preselected controlling valve of the second circuit; and

first fluid bypassing means for passing fluid from the first circuit, at a location between the preselected controlling valve of the first circuit and said first blocker valve, to a location in the second circuit between the preselected controlling valve of the second circuit and the preselected work element of said second circuit in response to said first blocker valve being moved to said second position.

4,142,446

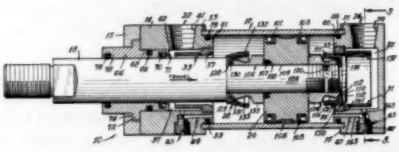
PISTON CYLINDER ASSEMBLY

Eugene S. Ides, 8915 Komensky, Hometown, Ill. 60456

Filed Apr. 27, 1977, Ser. No. 791,435

Int. Cl.[2] F15B *15/22*; F16J *11/02*

U.S. Cl. 91—26 **8 Claims**



1. A piston cylinder assembly adapted to be connected in fluid communication with a source of fluid under pressure:

cylinder means defining an elongated chamber;

a piston rod reciprocatively mounted within said piston chamber;

a piston fixed to said rod within said chamber;

means defining a pair of port means mounted at opposite ends of said cylinder means in fluid communication with said chamber and adapted to be connected in fluid communication with the source of fluid under pressure to enable said piston to be moved reciprocatively within said chamber, at least one of said port means having a laterally extending portion adapted to be connected in fluid communication with the source of fluid under pressure and having an axially extending portion intersecting transversely with said laterally extending portion and opening into the interior of said chamber, said laterally extending portion having a central axis extending transversely relative to the axis of said axial portion;

a tapered seal mounted on one of the end portions of said piston for sealing said axial portion of said one of said port means;

a sleeve member extending axially within the last-mentioned axial portion of said port means and being fixedly secured in place, said sleeve member having a tubular portion extending past the intersection between the laterally extending and axially extending portions and terminating at one of its ends at a position disposed opposite said lateral portion at least substantially the axis thereof; and

bleeding means for permitting fluid to leave said chamber as said seal engages sealingly said sleeve member.

4,142,447

HYDRAULIC ACTUATOR

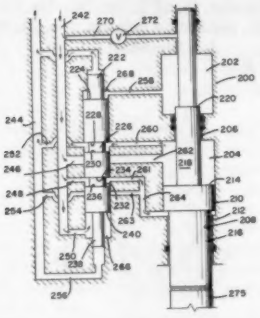
Eugene L. Krasnoff, Princeton, and Herman Lindeboom, Pennington, both of N.J., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Continuation of Ser. No. 699,493, Jun. 24, 1976, abandoned, which is a continuation-in-part of Ser. No. 533,969, Dec. 18, 1974, abandoned. This application Mar. 27, 1978, Ser. No. 890,382

Int. Cl.[2] F01L *25/02*

U.S. Cl. 91—280 **4 Claims**

1. A hydraulic actuator comprising: a liquid source for supplying an operating pressure to a housing, the housing having a pressurized cushion chamber and a separate piston chamber, said housing having a bore interconnecting the cushion chamber and the piston chamber the bore having a smaller diameter than the diameter of the cushion chamber and a smaller diameter than the diameter of the piston chamber; a piston mounted within said housing, said piston extending through the piston chamber through the interconnecting bore and into the pressurized cushion chamber, said piston having a first liquid pressure surface in the piston chamber and a second liquid pressure surface in the piston chamber and a portion thereof having a diameter substantially the same as the diameter of the interconnecting bore and long enough to keep the cushion chamber substantially pressure isolated from the piston chamber during the entire cycle, said piston also having a cushion chamber liquid pressure surface which alternately, continuously compresses the liquid in the cushion chamber during movement of the piston in one direction and continuously permits the liquid in the cushion chamber to expand during movement of the piston in the other direction as the piston reciprocates; and piston reciprocating means comprising valve means, a first port and a second port axially spaced from the first port, the ports supplying operating pressure from the valve means to the piston chamber, the spacing between the ports being such that



the ports are continuously open during the entire cycle of the piston, the piston reciprocating means further comprising hydraulic flow conduits connected between the liquid source and said valve means, said valve means being biased in a first direction by having a first portion thereof continuously directly subjected to the cushion chamber pressure, said valve means and said hydraulic flow conduits being constructed so that during the entire cycle the operating pressure acts in a direction opposite said first direction on a second portion of the valve means to oppose the bias resulting from the pressure on the valve means first portion, the operating and cushion pressures and the dimensions of the piston cushion chamber liquid pressure surface and valve means first and second portions being chosen such that said valve means begins moving to a first piston when the pressure in the cushion chamber relative to said operating pressure reaches a first predetermined level to permit the application of operating pressure to said first liquid pressure surface, said valve means beginning to move a second position when the pressure in the cushion chamber reaches a second predetermined level relative to said operating pressure to permit the application of operating pressure to said second piston liquid pressure surface.

4,142,448

RACK AND PINION POWER STEERING GEAR

Louis R. Erwin, Livonia, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Feb. 3, 1977, Ser. No. 765,499

Int. Cl.[2] F15B *9/10*

U.S. Cl. 91—372 **2 Claims**

1. A rack and pinion steering gear comprising:

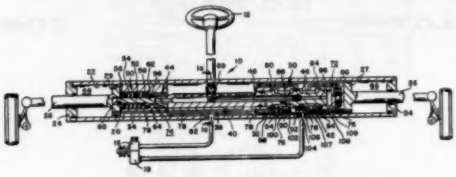
a housing having a bore therein;

a pair of rods extending from said housing to operatively engage a pair of steerable wheels;

a sleeve slidably mounted in said bore and cooperating with said pair of rods to move in unison therewith, said pair of rods cooperating with said housing to define within said bore a pair of working chambers at opposite ends of said sleeve;

an inlet port communicating pressurized fluid to said bore; and

a rack slidably mounted in said sleeve and defining with said sleeve a pair of feedback chambers at opposite ends of said rack, said rack being movable by a pinion in one direction and cooperating with said sleeve to communicate said inlet port with one of the working chambers whereby the pressure therein moves said sleeve in said bore and also cooperating with said sleeve to communicate said inlet



port with one of the feedback chambers whereby the pressure therein opposes the movement of said rack in the one direction, said rack being movable by the pinion in the other direction and cooperating with said sleeve to communicate said inlet port with the other working chamber whereby the pressure therein moves said sleeve in said bore and also cooperating with said sleeve to communicate said inlet port with the other feedback chamber whereby the pressure therein opposes the movement of said rack in the other direction;

said sleeve including a first portion slidably engaging said bore at one end of said rack and a second portion spaced from said first portion and slidably engaging said bore at the other end of said rack, and said rack including a valve member which is movably disposed within said sleeve first portion.

4,142,449

HYDRAULIC MINE PROP

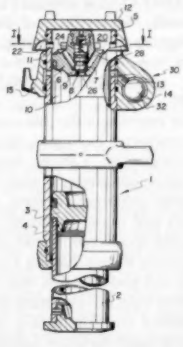
Manfred Koppers, and Otto Dombrowski, both of Duisburg, Fed. Rep. of Germany, assignors to Thyssen Industrie AG, Fed. Rep. of Germany

Filed Jan. 21, 1977, Ser. No. 761,017

Claims priority, application Fed. Rep. of Germany, Feb. 3, 1976, 2603987

Int. Cl.[2] E21D *15/44*; F15B *13/042*

U.S. Cl. 91—468 **1 Claim**



1. A hydraulic mine prop, comprising a cylindrical top ram portion, a bottom ram portion telescopically engageable in said top ram portion and having an upper piston portion in sliding sealing engagement with the interior of said top ram portion, a ram head closing the top of said top ram portion, a valve seat body defined within said top ram portion adjacent said ram head extending across the interior of said top ram portion and having a valve seat portion and enclosing a vent space between said ram head and said valve seat body having an opening to atmosphere and also enclosing a pressure space between said valve seat body and said piston, an outlet passage extending through said valve seat body within said valve seat portion communicating said pressure space to said vent space, a valve member engageable with said valve seat portion to close said passage, spring means biasing said valve member into a closing position, said valve member being movable in an opposite direction against said spring means during a rock burst to open said passage sufficiently to permit outward flow of pressure from said pressure space through said valve seat body member and said passage, said valve seat body comprising a pot-type valve housing extending across the interior of said top ram portion adjacent the top thereof and having a central valve passage, said valve member being disposed in said passage above said valve seat, said pot-type valve housing also having at least one obliquely extending passage, defining said outlet passage, extending from said valve member obliquely upwardly into the space between said pot-type valve housing and the top of said top ram portion, said ram head having a skirt portion externally of said top ram portion and extending down and forming a venting air deflecting surface, and a vent opening in the wall of said top ram portion adjacent the upper end of said oblique passage in said pot-type valve housing in alignment with said skirt portion to direct air toward the air deflecting surface.

4,142,450

AXIAL PISTON ROTARY HYDRAULIC MACHINES

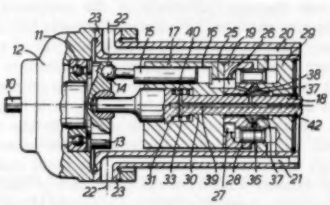
Jean U. Thoma, Bellevueweg 23, 6300 Zug, Switzerland

Filed Jan. 10, 1977, Ser. No. 758,135

Claims priority, application Switzerland, Jan. 13, 1976, 542/76

Int. Cl.[2] F01B *13/06*

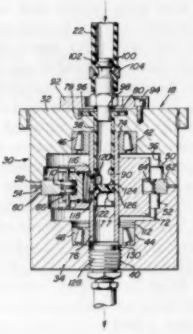
U.S. Cl. 91—485 **5 Claims**



1. An axial piston rotary hydraulic machine including a casing, a central shaft, a rotating cylinder block having a plurality of generally parallel axial cylinders each containing a piston, said cylinder block surrounding and being axially slidably supported by said shaft, so as to allow limited lengthwise displacement of said block relative to said shaft but prevent tilting of said block about transverse axes, said central shaft being supported at both ends within said casing endwise beyond both ends of said cylinder block, a non-rotating valve plate surrounding said shaft and having ports to communicate successively with ports in an adjacent end face of said cylinder block on rotation of said block, and a single abutment member having a part-spherical abutment surface surrounding said shaft and in contact with a complementary surface on said valve plate, and centered on the axis of said shaft, said abutment member being grounded to a part of said casing and supporting said valve plate and allowing only pivotal movement of said valve plate about at least two axes transverse to

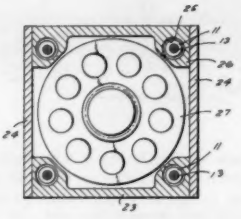
the axis of the cylinder block by virtue of the part-spherical abutment surface of said single abutment member.

4,142,451
VIBRATOR
Cameron A. Burns, 615 Catalina Way, Modesto, Calif. 95350
Filed May 3, 1977, Ser. No. 793,427
Int. Cl.[2] F01B *13/06;* E01C *19/38;* B06B *1/16*
U.S. Cl. 91—491 **13 Claims**



1. In combination, a fluid motor including a housing defined by a pair of housing end halves removably secured together, said halves having aligned bores formed therethrough including first enlarged counterbores opening toward each other, enlarged cavity halves formed in the adjacent portions of said housing halves into which the adjacent ends of said counterbores open, second enlarged counterbores formed in and opening outwardly through the adjacent portions of said halves comprising enlargements of the adjacent ends of said cavity halves, a pair of bearings in said first counterbores, a tubular shaft having a longitudinal bore formed therethrough and its opposite ends journaled from said bearings, an eccentrically weighted rotor mounted on said tubular shaft for rotation therewith and disposed between said bearings and within said cavity halves, said rotor having at least one piston bore formed therein extending generally radially of the axis of rotation of said rotor and opening outwardly of the periphery of said rotor, a ramp ring mounted between said housing halves in said second counterbores and defining at least one pair of approach and departure ramp surfaces extending thereabout in registry with which the outer end of said bore swings on rotation of said rotor in said cavity halves, a piston receptacle in said bore, said piston including thrust transfer surface means rollingly engaged with said ramp surfaces, inlet and outlet means operative to admit fluid under pressure into the inner end of said bore and to exhaust fluid from the inner end of said bore in timed relation with rotation of said rotor as said thrust transfer surface means rolls into position for rolling engagement with said departure and approach ramp surfaces, respectively, a stationary fluid pressure tube having one end portion rotatably and telescopingly received in one end portion of said tubular shaft and the other end removably stationarily received within the corresponding housing half bore, said tube including a partition therein intermediate its opposite ends and outwardly opening first and second ports formed therein on opposite sides of said partition, inlet and exhaust ports in said rotor opening into the inner end of said piston bore at one pair of corresponding ends and swingable into an out of registry with said first and second ports, respectively, at the other pair of corresponding ends thereof upon rotation of said rotor, said inlet means including means operative to admit fluid under pressure into the other end portion of said fluid pressure tube on the first port side of said partition and said outlet means including exhaust means for exhausting fluid under pressure from said one end portion of said fluid pressure tube on the second port side of said partition, said exhaust means comprising said other housing half bore with which said one end portion of said fluid pressure tube is registered, and seal means forming a fluid seal between the external surfaces of said tube and the opposing surfaces of said longitudinal bore intermediate said first and second ports.

4,142,452
AXIAL-PISTON MACHINE WITH INCLINABLE CONTROL SURFACE
Franz Forster, Mühlbach, and Walter Heyl, Johannesberg, both of Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany
Filed May 9, 1977, Ser. No. 795,084
Claims priority, application Fed. Rep. of Germany, May 10, 1976, 2620523
Int. Cl.[2] F01B *13/04*
U.S. Cl. 91—506 **15 Claims**

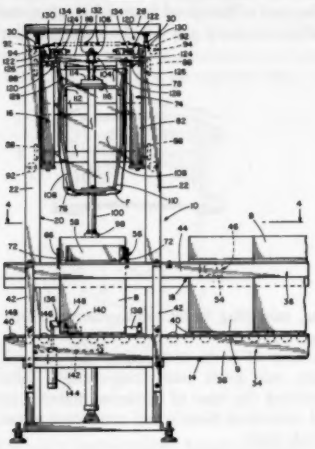


1. An axial-piston machine, comprising:
a housing;
a cylinder-drum member received in said housing and rotatable about a first axis therein, said cylinder-drum member being formed with a plurality of working cylinders each receiving a respective working piston;
a control-surface member engaged by said pistons and having, in a working position of the machine, an inclination to said axis whereby rotation of one of said members relative to said housing displaces said working pistons axially in the cylinders of said drum; and
tilting means in said housing for angularly displacing one of said members about a tilt axis perpendicular to the said axis of said drum thereby altering the inclination between said control surface member and said axis of said drum, said tilting means including setting elements disposed at four corners of a rectangle closely surrounding and circumscribing said drum as seen in cross section perpendicular to the axis of said drum.

4,142,453
FLEXIBLE CONTAINER INSERTING APPARATUS
Kenneth L. Gidewall, Naperville, and James Proce, Palatine, both of Ill., assignors to CVP Systems, Inc., Lombard, Ill.
Filed Nov. 4, 1977, Ser. No. 848,475
Int. Cl.[2] B31B *7/02*
U.S. Cl. 93—36.01 **8 Claims**

1. Apparatus for inserting a flexible container into a substantially rigid outer container having an open end, said apparatus comprising, in combination, a frame, means on said frame for supporting said outer container, means on said frame for receiving said flexible container thereon, said receiving means being aligned with said outer container, said receiving means having a leading end and a trailing end, said flexible container, when on said receiving means, having a closed end coextensive with said leading end and an open end coextensive with said trailing end, means operatively mounted on said receiving means at said trailing end for folding said open end of said flexible container around the outer periphery of said open end of said outer container, and means on said frame for moving said receiving means with said flexible container thereon into

said outer container until said leading end abuts the closed end of said outer container, with said flexible container being inserted into said outer container, said folding means being con-



structed and arranged to continue moving relative to said receiving means for folding said open end of said flexible container around said periphery of said open end of said outer container.

4,142,454

MACHINE FOR COUNTING FLAT ARTICLES

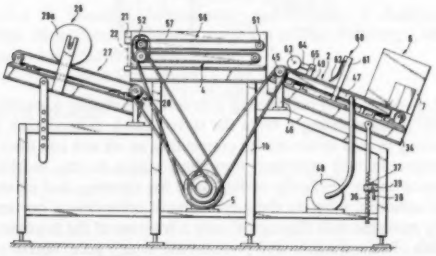
Helmut Staufner, Alte Schiffahrt 4, D 7300 Esslingen-Mettingen, Fed. Rep. of Germany

Filed Jul. 15, 1976, Ser. No. 705,610

Claims priority, application Fed. Rep. of Germany, Jul. 15, 1975, 2531486; Nov. 11, 1975, 2550590; Apr. 28, 1976, 2618762

Int. Cl.[2] B31B *1/94*

U.S. Cl. 93—93 C **13 Claims**



1. A machine for separating, conveying and counting a plurality of flat bodies such as books, notebooks or sheets of paper comprising

receiving means for receiving a stack of flat bodies and for permitting the body being removed to be separated from the body stacked on top of it to permit removal of said bodies one at a time from the bottom of said stack,

conveying means having an inclined end portion extending into and forming the bottom of said receiving means for removing bodies from said stack by successively removing the bottom of one of said bodies, said end portion having a conveyor belt inclined in a direction such that bodies removed from said receiving means are conveyed upwardly and away from the stack;

said receiving means having an end wall for supporting the side of the stack away from the direction of conveyance,

said end portion of said conveying means including means for establishing a driving connection between said conveying means and the bodies, one at a time, said means including means defining a plurality of separated groups of holes through said belt, said groups being substantially equally spaced apart, and

a vacuum source disposed under said belt and acting through said holes so that said bodies are successively engaged and conveyed away in longitudinally spaced relationship, the engagement of said bodies by the vacuum acting through said holes being the sole active means, operating in combination with said belt, for separating articles from said stack,

the spacing between said holes being selected such that said bodies are removed and conveyed in spaced relationship;

means for counting said bodies as they are conveyed by said conveying means; and

collecting means for receiving counted bodies.

4,142,455

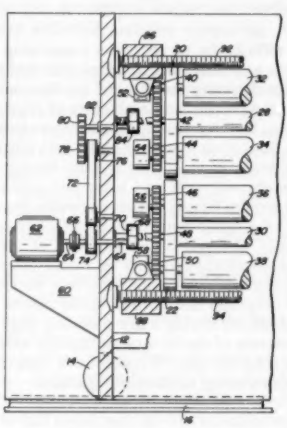
SLITTING APPARATUS

Robert E. Coburn, Warminster, Pa., assignor to Molins Machine Company, Inc., Cherry Hill, N.J.

Filed Oct. 5, 1977, Ser. No. 839,724

Int. Cl.[2] B31B *1/16*

U.S. Cl. 93—58.2 R **3 Claims**



1. Apparatus for slitting and scoring a moving web comprising a frame, a first pair of turrets having an upper turret disposed above a lower turret, a second pair of turrets having an upper turret disposed above a lower turret, said upper turrets being at a first elevation, said lower turrets being at a second elevation, each of said turrets being supported by said frame for rotation about horizontal axes, each turret having a pair of diametrically disposed parallel blade shafts, each of said blade shafts including at least one axially movable blade for slitting or scoring the web, each of said blade shafts having an operative position and an inoperative position, a first motor means coupled to each of said blade shafts for rotatably driving each blade shaft, a clutch associated with each blade shaft for interrupting the driving connection between said first motor means and said blade shafts when a blade shaft is in an inoperative position, a second motor means coupled to each turret simultaneously rotating each turret through an arc of 180° to thereby move the blade shafts between their operative and inoperative positions, an upper shifter supported for movement parallel to the axes of said blade shafts adjacent the inoperative position of the blade shafts on the upper turrets, means associated with

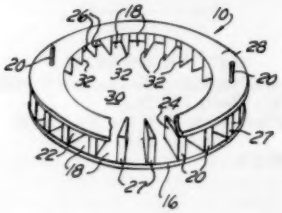
said upper shifter for selectively shifting blades on the blade shafts on the upper turrets while said shafts are in an inoperative position, a lower shifter supported for movement parallel to the axes of said blade shafts adjacent the inoperative position of the blade shafts on the lower turrets, means associated with said lower shifter for selectively shifting blades on the blade shafts on the lower turrets while said shafts are in an inoperative position, each of said shifters having a parked position between said frame and one end of the turrets, each turret being rotatable by said second motor means only when said shifters are in the parked position.

4,142,456

AIR DIFFUSER

Howard W. Locker, 820 N. Ocean Blvd., Delray Beach, Fla. 33444

Filed Jul. 20, 1977, Ser. No. 817,222
Int. Cl.[2] F24F *7/00*
U.S. Cl. 98—40 D **6 Claims**



1. An air diffuser for an air outlet comprising substantially parallel upper and lower baffle means for confining therebetween and for directing the flow of air from said outlet to a predetermined direction, and a plurality of regularly disposed nozzles formed between said upper and lower baffle means and dividing the flow of air from said outlet into separate mutually diverging streams, each of said nozzles having substantially parallel opposite sidewalls and being substantially square in section, said nozzles having outlets generally disposed about at least an arc of a circle with the axes of consecutive nozzles being mutually disposed at an angle of at least about 15° wherein said nozzles are formed by wedge-shaped stationary fin members regularly and equally radially disposed about the periphery of said top and bottom baffle means, said wedge-shaped fin members having a sharp leading edge of about 15° disposed upstream of the flow of air through said nozzles, and the opposite sides of a pair of consecutive ones of said wedge-shaped members being substantially parallel.

4,142,457

LOST MOLD FOR THE CASTING OF A MOUTHPIECE OR NOZZLE FOR A CHIMNEY OR SMOKESTACK

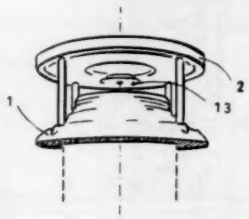
Michel H. Zaniewski, Ave. Ferdinand de Lesseps, Frontignan, France (34110)

Filed May 16, 1977, Ser. No. 797,174
Claims priority, application France, May 21, 1976, 76 15872
Int. Cl.[2] F23L *17/02*
U.S. Cl. 98—58 **9 Claims**

6. A draw-promoting device for a chimney comprising:

a nozzle body of hardened material case in a lost mold of thin lightweight material forming a covering for said hardened material, said body having a frustoconical passage converging upwardly and provided with a portion at its lower end receiving the upper end of said chimney and a cylindrical portion at its upper end, said body having a frustoconical outer configuration converging upwardly from a broad base and terminating at its upper end in an inwardly turned rim, said passage forming a Venturi throat adjacent said rim;

a cap spaced above said rim and consisting of a generally flat substantially circular body of downwardly converging shallow conicity coaxial with said nozzle body, generally said flat body being formed with a central opening receiving a generally cylindrical plug defining the vertex of the cone of the underside of said generally flat body, said cap being cast of hardened material in a lost mold having said shallow conicity and a cylindrical portion defining said



plug, said plug being removable to afford access to the chimney; and

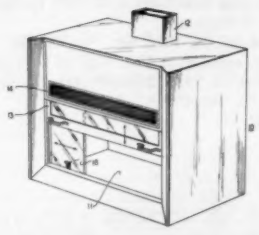
a plurality of posts connecting said cap with said nozzle body, said posts each comprising a tubular lost mold receiving the mass of hardened material and having a tie rod embedded therein and connected to said cap and said nozzle body.

4,142,458

ENERGY CONSERVING FUME HOOD

Arthur Duym, 134 Willoughby Rd., Fanwood, N.J. 07023

Filed Nov. 18, 1977, Ser. No. 852,664
Int. Cl.[2] F23J *11/00*
U.S. Cl. 98—115 LH **5 Claims**



1. A fume hood comprising a structure enclosing a working surface and isolating it from the surrounding environment, an opening in said structure for connecting an air exhaust duct, a window in said structure providing access to the working surface and a vertically sliding sash for opening and closing said window, wherein the improvement comprises a horizontally movable sash closing off only a fraction of the horizontal width of said window and positionable at any point across the width of the window, whereby the volume of air required to be drawn through the window to maintain the mimimum necessary air velocity when the vertically sliding sash is in the open position is reduced by said fraction but access to any portion of the working surface can be obtained by the positioning of said horizontally movable sash.

4,142,459

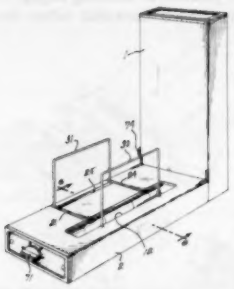
TOASTER FOR STEP-BY-STEP TOASTING

Lionel Lalancette, 241 de la Bretagne St., Jonquiére, Canada

Filed Jun. 8, 1977, Ser. No. 804,803
Int. Cl.[2] A47J *37/08*
U.S. Cl. 99—334 **22 Claims**

1. A toaster for step-by-step toasting comprising a body having a thickness between a pair of opposite faces thereof manifold smaller than the breadth of a slice of bread and hav-

ing a slot extending through said body from one to the other of said opposite faces, an elongated support movably connected to said body in registry with said slot and operatively carrying a slice of bread edgewise thereon in alignment with said slot, actuation means connected to said body and to said support and operatively displacing the latter stepwise laterally to said slot, a pair of elongated electric toasting elements mounted on said body and extending along and on opposite sides respec-



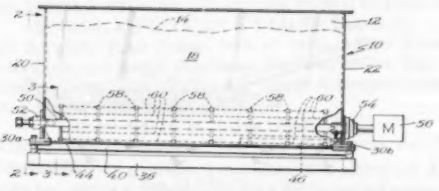
tively of said slot, and a heat sensitive device mounted on said body adjacent said slot and connected to said actuation means, whereby successive fractional zones of the slice of bread are toasted step-by-step across the breadth of the slice of bread during stepwise advance of said successive fractional zones through said slot upon operation of said actuation means by said heat sensitive device in response to the heat of toasting against a preceding fractional zone.

4,142,460

APPARATUS FOR PREPARING CRUNCHY FOOD TOPPING

Charles N. Standing, Minneapolis, and Timothy F. Scrivner, New Hope, both of Minn., assignors to The Pillsbury Company, Minneapolis, Minn.

Filed Oct. 31, 1977, Ser. No. 846,962
Int. Cl.[2] A21B 3/07
U.S. Cl. 99—353 **5 Claims**



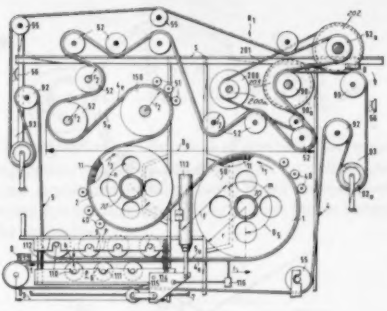
1. An apparatus for providing a crunchy food topping comprising a dough storage hopper, the hopper having an outlet at the bottom thereof, a shaft mounted for rotation in the bottom of the hopper, an elongated narrow cutting member comprising at least one wire supported on the shaft in a position spaced radially therefrom and extending parallel to said shaft whereby rotation of said shaft rotates said cutting member in a circle about the longitudinal axis of said shaft and drive means connected to said shaft to cause the cutting member to repeatedly pass through the lower portion of dough when dough is placed in the hopper thus forming dough granules.

4,142,461

DEVICE FOR DEWATERING SLUDGE AND OTHER MATERIAL CONTAINING WATER AND SOLID PARTICLES

Wendel Bastgen, Betzdorf, Sieg, Fed. Rep. of Germany, assignor to Alb. Klein KG, Niederfischbach, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 477,413, Jun. 7, 1974, Pat. No. 4,019,431. This application Mar. 17, 1977, Ser. No. 778,695
Claims priority, application Fed. Rep. of Germany, Apr. 3, 1976, 7610510[U]
Int. Cl.[2] B30B 9/24
U.S. Cl. 100—118 **18 Claims**



18. A device for dewatering sludge and similar material containing liquid and solid particles comprising, in combination:

first and second drums disposed substantially along a horizontal line in side by side spaced realtion and rotatable in opposite directions, said drums having perforatted walls for passage of water released from sludge into said drum;

a pair of endless filter bands disposed in superimposition for feeding sludge to be dewatered between said bands, means defining a preliminary pressure zone, said filter bands being first guided to said preliminary pressure zone and then to said drums, said means which defines said preliminary pressure zone including an elongate guide track for guiding said filter bands and adjustable pressure means for applying pressure to the filter bands while passing through said guide track thereby removing water from the sludge between the bands,

said filter bands being guided from the pressure zone to and about a part of the circumferential wall of said first drum in pressure engagement of the inner filter band therewith and then to and about part of the circumferential wall of the second drum in engagement therewith so that the positions of the filter bands relative to the walls of the drums are reversed for discharging water released from the sludge through the filter band constituting the inner band while in engagement with the respective drum into the drums and so that said drums are rotated in opposite direction;

a plurality of guide rolls disposed above the drums for guiding said superimposed filter bands upon leaving the circumferential wall of said other drum along a meandering path to effect further dewatering of the sludge through said filter bands;

a deflection roll disposed intermediate said second drum and the first guide roll of said plurality of guide rolls over and by which the filter bands are guided after leaving said second drum, said deflection roll and said first guide roll being positioned to guide the filter bands along a substantially S-shaped path as seen in elevational position relative to the drums, drive means for driving the filter bands and rotating said drums; and

means for spreading the filter bands apart along part of their

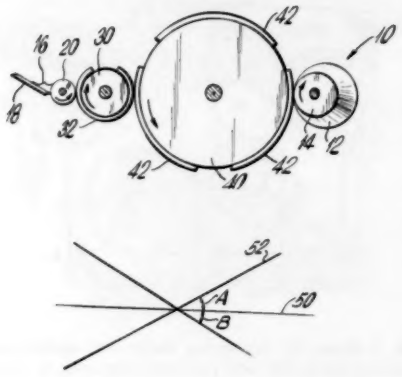
path thereby forming a discharge chute for the dewatered sludge.

4,142,462

HALFTONE PRINTING METHOD

Wayne M. Gilgore, Cornwall-on-Hudson, N.Y., assignor to International Paper Company, New York, N.Y.

Filed May 11, 1977, Ser. No. 795,931
Int. Cl.[2] B41M *1/20*; B41F *17/28*
U.S. Cl. 101—38 R 7 Claims



1. A method for printing a multicolored halftone image on a truncated conical substrate surface wherein said image comprises at least two distinctly colored overlapping partial images and wherein each partial image comprises a plurality of similarly-toned parallel lines, comprising

(a) forming each partial image on a cylindrical printing surface so that the lines of each partial image are at a unique angle of no more than 45° with a line perpendicular to the nip between the substrate surface and the respective printing surface, the parallel lines of one partial image being substantially perpendicular to the nip and the angle associated with each partial image being sufficiently different from the angle associated with any other partial image so as to prevent moire; and

(b) transfering each partial image from the respective printing surface to the truncated conical substrate surface at the nip between the substrate surface and the respective printing surface.

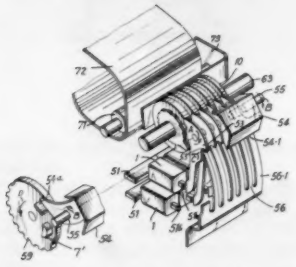
4,142,463

PRINT CHARACTER SELECTION MECHANISM

Yoshihiro Mitsui, and Tadayoshi Shimodaira, both of Shiojiri, Japan, assignors to Shinshu Seiki Kabushiki Kaisha and Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Apr. 27, 1977, Ser. No. 791,454
Claims priority, application Japan, Apr. 27, 1976, 51/53008[U]
Int. Cl.[2] B41J *1/30*
U.S. Cl. 101—99 4 Claims

1. In a printer including a plurality of character rings having print characters circumferentially disposed thereabout, said print characters being selectively positioned in a print position by rotation of said character rings in a first rotational direction from a rest position, each of said character rings having a ratchet gear coupled thereto, each of said ratchet gears having a plurality of circumferentially disposed teeth, each of said teeth corresponding to a print character disposed on said print character ring, the improvement comprising a core member including a plurality of selection portions, each selection portion being associated with a character ring and a common portion supporting each of said selection portions, an electromagnetic coil disposed about each said selection portion, each of said electromagnetic coils being normally energized to induce a flux field in said selection portion about which said coil is disposed, each said electromagnetic coil being further adapted to be selectively deenergized, a plurality of selection members, each selection member being associated with a selection portion and each selection member being adapted to be maintained in a rest position in abutting engagement with said selection portion associated therewith when the electromagnetic coil disposed thereabout is energized, each said selection member being mounted to be displaced from said rest position to an energizing position in engagement with a ratchet wheel associated therewith to thereby define a print position of said character ring, and a resilient biasing means disposed in engagement with each of said selection members and a demagnetizing circuit means coupled in parallel with each of said coils for reducing the attenuation level in said coils when same are deenergized, said demagnetizing circuit means including diode attentuation means series-coupled to an impedance means having a high impedance when ompared to said diode means.

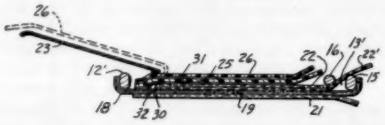


4,142,464

SCREEN PRINTING AND STENCIL ARTICLES, APPARATUS AND METHODS

Georg Rauch, 1 Vista de Catalina, South Laguna, Calif. 92677

Filed Nov. 15, 1976, Ser. No. 741,597
Int. Cl.[2] B41M *1/24*
U.S. Cl. 101—128.3 76 Claims



1. An article of manufacture comprising in combination:

means for providing a stencil including a screen and photosensitive emulsion for selectively stopping areas of said screen upon photographic exposure and development;

sheet-like means for receiving an image pattern through which said photosensitive emulsion is to be exposed;

means for shielding said photosensitive emulsion against spurious exposure, said shielding means including an exposure shield removably disposed between said screen and said image pattern receiving means; and

means for combining said stencil providing means, sheet-like image pattern receiving means and shielding means into a unitary stencil making assembly.

4,142,465

ROTARY WHEEL PRINTING MACHINE

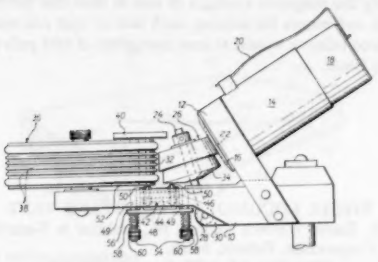
John Kemp, Liverpool, England, assignor to Lawtons of Liverpool Limited, London, England

Filed May 5, 1977, Ser. No. 794,078

Claims priority, application United Kingdom, May 10, 1976, 19102/76

Int. Cl.[2] B41F *17/26*

U.S. Cl. 101—330 9 Claims



1. A printing machine comprising a frame, an ink reservoir carried by said frame, a print drum having an end surface, means rotatably supporting said print drum on said frame with the axis of rotation thereof extending substantially normal to said frame, a transfer roller having an ink transfer surface extending about the periphery thereof and an end surface, a shaft extending between said ink reservoir and said print drum, means rotatably mounting said transfer roller about the axis of rotation thereof on said shaft with the ink transfer surface disposed between said ink reservoir and said print drum for transferring ink from said reservoir to said print drum and with said transfer roller end surface extending radially with respect to the axis of rotation of said print drum, means for pivotably mounting said shaft to said frame such as that said shaft is inclined with respect to said frame and toward said print drum and is movable with said transfer roller between said print drum and said ink reservoir, and a transfer drive for coupling said print drum to said transfer roller for rotating the transfer roller in response to rotation of the print drum, said transfer drive including a support mounted on said frame, and roller means rotatably carried by said support, said roller means being in direct rolling contact with both said end surface of said print drum and said end surface of said transfer roller, the direct rolling contact of the roller means enabling the surface speed of the transfer roller to be substantially equal to the surface speed of the print drum.

4,142,466

PROJECTILE WITH AT LEAST ONE PYROTECHNICAL CHARGE, ESPECIALLY A TRACER CHARGE

Kurt Ballreich; Ernst Jensen, both of Fürth; Alfred Ketterl, Neumarkt, and Rudolf Stahlmann, Fürth, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Fed. Rep. of Germany

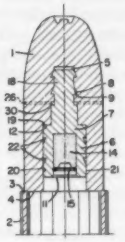
Filed Jul. 15, 1977, Ser. No. 816,136

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1976, 2634518

Int. Cl.[2] F42B *11/16*

U.S. Cl. 102—87 29 Claims

1. A projectile having at least one longitudinally extending recess means emanating from the rear end of the projectile, the projectile being formed of a material of one of low strength and low softening point, a rearwardly open sleeve means having at least one pyrotechnical charge arranged therein, the sleeve means being at least partially disposed within the recess means, the sleeve means including a sleeve member having a predetermined external diameter and a stem-shaped forward extension portion having an external diameter smaller than the external diameter of the sleeve member, and means for enabling retention of the sleeve means within the recess means during and after the firing of the projectile, the retention enabling means including an abutment surface of the projectile, a portion of the sleeve member contacting the abutment surface of the projectile for supporting the sleeve means in the forward direction and effecting a seal thereat, the retention enabling



means further including at least one of pressure relief means for relieving pressure build-up resulting from propellant gases in the recess means and holding means in the stem-shaped forward extension portion establishing a form-fitting connection with the projectile.

4,142,467

PROJECTILE WITH SABOT

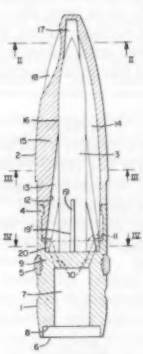
Rudolf Stahlmann; Uwe Brede, both of Furth, and Axel Homburg, Bensberg, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 7, 1977, Ser. No. 813,432

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1976, 2630830

Int. Cl.[2] F42B *13/16*

U.S. Cl. 102—93 35 Claims



1. A sabot projectile comprising a subcaliber projectile, a sabot having at least one longitudinally extending bore means arranged for exposure to propellant gases upon firing of the sabot projectile from a barrel of a weapon, and a hood means arranged in front of the sabot and surrounding at least a portion of the subcaliber projectile, the hood means being coupled at least to one of the sabot and the subcaliber projectile and being separable therefrom, the bore means being arranged for directing the propellant gases onto the hood means for accelerating the hood means relative to at least one of the sabot and subcaliber projectile while the sabot projectile is within the barrel of the weapon. sabot

4,142,468

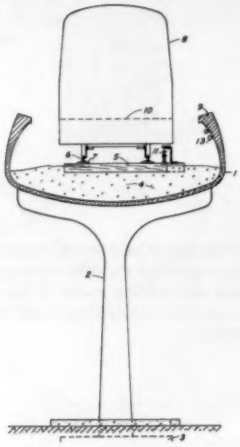
ELEVATED RAIL TRANSIT GUIDEWAY WITH NOISE ATTENUATORS

Charles Birnstiel, 68-15 Fleet St., Forest Hills, N.Y. 11375

Continuation-in-part of Ser. No. 678,669, Apr. 23, 1976, abandoned. This application Apr. 7, 1977, Ser. No. 785,517

Int. Cl.[2] E01B *19/00*

U.S. Cl. 104—124 **6 Claims**



1. A noise suppressing elevated rail transit guidance system for dual rail tracks, including a spanning member, said spanning member adapted to be supported on at least one column, said spanning member including a dual track, side walls, at least one side wall including a longitudinal edge beam, said side walls extending to about the floor level of vehicles normally running on said track, said edge beam being integral to said spanning member and of sufficient thickness to longitudinally support said spanning member and normal transit ransit of rail vehicles, noise absorption means in said spanning member, said noise absorption means at least beneath said dual track and extending substantially to at least the walls of said spanning member, and said side walls including at least an inner curved configuration adapted to reflect noise from said vehicle on said tracks downward into said noise absorption means.

4,142,469

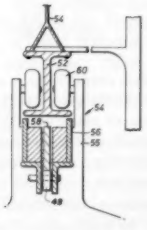
MAGNETIC SUSPENSION SYSTEM FOR RAILWAY VEHICLE WITH LIFTING FORCE CONTROL

Geoffrey R. Polgreen, Wendover, England, assignor to British Steel Corporation, London, England

Filed Mar. 26, 1976, Ser. No. 670,671

Int. Cl.[2] B61B *13/08*

U.S. Cl. 104—148 MS **11 Claims**



1. A tracked vehicle magnetic suspension system arranged to lift the vehicle relative to a track having a downwardly facing surface of magnetic material along which the vehicle is movable, the system including at least one permanent magnet, at least two pole pieces of said at least one permanent magnet suitably disposed in relation to said at least one permanent magnet to enable a magnetic circuit to be formed between said at least one permanent magnet and the surface of said track through said pole pieces, at least one of said pole pieces being movable relative to at least one other of said pole pieces in directions towards and away from the track so as to be capable of varying the flux in the magnetic circuit without permanently reducing the magnetic strength of said at least one permanent magnet, and means for moving each said at least one movable pole piece relative to said at least one other of said pole pieces and the track.

4,142,470

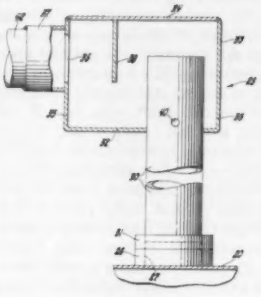
DIESEL LOCOMOTIVE FUEL TANK VENT

Louis V. Zauss, Western Springs, Ill., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 15, 1977, Ser. No. 860,954

Int. Cl.[2] B61C *17/02;* **F17D** *1/08*

U.S. Cl. 105—26 R **3 Claims**



1. A low height spill resistant pressure relieving vent in combination with a fuel tank mounted to a railway locomotive, said vent comprising

a short standpipe mounted on the locomotive fuel tank and extending thereabove a sufficient height only to prevent any overflow of fuel therefrom under all conditions of braking deceleration of the locomotive that may occur prior to the terminal moments of a full stop,

an enclosed overflow vessel having an inlet connected with the upper end of the standpipe and an outlet spaced from the standpipe, said vessel having a volume below the level of said outlet sufficient to contain the total quantity of fuel that may overflow the standpipe during said terminal moments of a full stop of the associated locomotive,

baffle means in said overflow vessel and disposed between the standpipe and the outlet in position to prevent dynamic carryover of overflowed fuel from the standpipe to the outlet, and

return means for returning overflowed fuel from said vessel to the associated fuel tank,

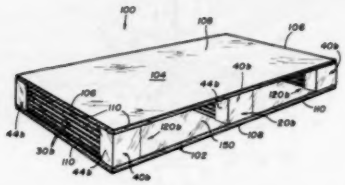
said standpipe, said outlet and the flow path between them within said vessel being sufficiently large to pass fuel at a rate equal to the maximum flow rate of fuel filling equipment utilized to fill the tank without creating a back pressure sufficient to damage the tank

whereby an open vent is provided that positively prevents fuel loss during locomotive operation and also prevents damage to the fuel tank due to pressurization or overfilling.

4,142,471
PALLET HAVING REINFORCED GYPSUM STRUCTURAL MEMBERS

Robert M. Mustoe, Winnetka, and Fred H. Zajonc, Palatine, both of Ill., assignors to United States Gypsum Company, Chicago, Ill.

Division of Ser. No. 430,352, Jan. 2, 1974, abandoned. This application Oct. 12, 1976, Ser. No. 731,157
Int. Cl.[2] B65D *19/00*
U.S. Cl. 108—57.1 1 Claim



1. A pallet comprising

a generally flat bottom sheet and a generally flat top sheet superimposed with respect to the bottom sheet,

a plurality of sills sandwiched between and spacing apart said sheets, a sill being positioned adjacent to each of two opposite edges of the sheets,

each of said sills further comprising

a plurality of elongate, generally flat rehydrated gypsum strips having opposite faces terminating in circumferential edges, said strips being assembled together face to face,

each of said strips being of approximate equal length, having two opposite ends,

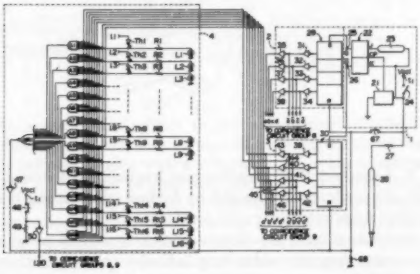
means for attaching each of said strips to the next adjacent strip with the strip ends aligned, and

a water-impervious cover closely positioned over said sheets and over at least some of the circumferential edges of said edge-adjacent sills arranged to be interposed between said pallet and a load placed thereon.

4,142,472
CONTROL APPARATUS FOR AN ELECTRICALLY DRIVEN SEWING MACHINE WITH STITCH PATTERN PRODUCING DEVICE

Katsuji Soeda; Fumio Sakuma, and Mitsuhiro Ooyama, all of Sukagawa, Japan, assignors to Yamamoto Electric Industrial Co., Ltd., Fukushima, Japan

Filed Aug. 17, 1977, Ser. No. 825,479
Claims priority, application Japan, Oct. 12, 1976, 51-122060
Int. Cl.[2] D05B *3/02*
U.S. Cl. 112—158 E 5 Claims



1. A control apparatus for an electrically driven sewing machine with a stitch pattern producing apparatus, comprising:

electric signal generator means for generating an electric signal related to at least one predetermined angular position of a main shaft of the sewing machine;

probe means having a bias signal output;

set board means capable of setting therein a desired stitch pattern using said probe means, said set board means comprising;

a first switching matrix comprising a first coordinate composed of a plurality of coordinate points at intersections between a first predetermined number of rows and a second predetermined number of columns, and switching elements each having a control electrode and operable between first and second states, each of said switching elements being provided at each of said coordinate points, whereby said information of needle position of a desired stitch pattern is set in said coordinate;

a second switching matrix comprising a second coordinate composed of a plurality of coordinate points at intersections between said first predetermined number of rows and a third predetermined number of columns, and switching elements each having a control electrode and disposed at each of said coordinate points, whereby information of cloth feed operation of the desired stitch pattern is set at said second coordinate;

reset circuit means for resetting said switching elements from said second state to said first state;

each of said switching elements being adapted to be energized by applying said bias signal to said control electrode by contacting thereto said probe, thereby to be switched to said second state from said first state, wherein the coordinates of said energized switching elements of said first switching matrix represent said needle position information, while the coordinates of said energized switching elements of said second switching matrix represent said feed operation information;

pattern detecting means for reading out cloth feed information of the stitch pattern and information of needle position along the direction perpendicular to the cloth feed direction set in said set board means in response to said electrical signal;

said pattern detecting means being adapted to respond to said electrical signal for selecting one row from said predetermined number of rows of said first switching matrix and reading out the column coordinates of said switching elements operated in said second state and belonging to said selected row, thereby to output said column coordinates as said read-out needle position information;

said pattern detecting means being further adapted to respond to said electric signal for selecting one row from said predetermined number of rows of said second switching matrix and reading out the column coordinates of said switching elements operated in said second state and belonging to said selected row, thereby to output said column coordinate as said read-out feed operation information;

needle bar driving means for setting the needle bar at a predetermined position in dependence upon said information of needle position as read out; and

cloth feeding means for effecting predetermined cloth feeds in dependence upon said feed information as read out, whereby sewing operation is carried out in the same stitch pattern as the one set at said set board means.

4,142,473
MICRO PROCESSOR CONTROLLED SEWING MACHINE PATTERN GENERATOR

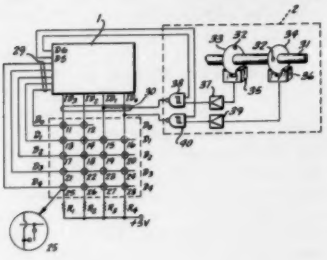
Akihiko Itoh, 4638 Deelane St., Torrance, Calif. 90503

Filed Aug. 19, 1977, Ser. No. 826,070
Claims priority, application Japan, Aug. 26, 1976, 51-101806
Int. Cl.[2] D05B *3/02*
U.S. Cl. 112—158 E 4 Claims

1. In a sewing machine comprising servo means for receiv-

ing digital pattern data corresponding to needle and fabric positions and for moving said needle and fabric to the designated positions, apparatus for generating said digital pattern data comprising:

a memory for storing pattern data corresponding to the fabric and needle motions required to produce a plurality of patterns,



switch means comprising a plurality of switches for producing a plurality of digital signals, each switch corresponding to a pattern stored in said memory, and

a microprocessor responsive to said plurality of digital signals for accessing the corresponding data patterns and for outputting said patterns to said servo means, said microprocessor further comprising means for cyclically repeating the series of patterns designated by said switch means.

4,142,474

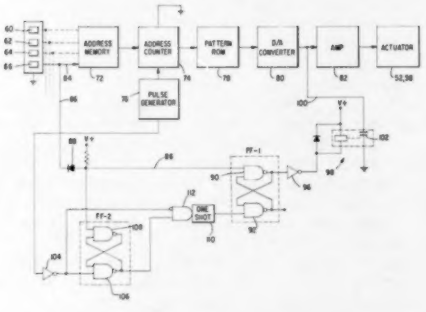
SEWING MACHINE PATTERNING MEANS

Theodore L. Bowles, South Orange, N.J., assignor to The Singer Company, New York, N.Y.

Filed Dec. 5, 1977, Ser. No. 857,484

Int. Cl.[2] D05B *3/02*

U.S. Cl. 112—158 E **4 Claims**



1. In a sewing machine including a needle bar supporting an endwise reciprocable needle, a work bed on the machine, a throat plate on the work bed with an aperture for the needle, an actuator cooperating with the needle for moving the needle laterally, work feeding means, a plurality of stitch selectors individually operable to cause said actuator and work feeding means to produce a selected stitch, the combination comprising a signal generator to produce a pulsating signal during operation of the machine, circuitry connected with the stitch selecting means and the signal generator operable in response to actuation of any one of the stitch selectors to produce a temporary signal causing the actuator to move the needle to a central position over the throat plate aperture.

4,142,475

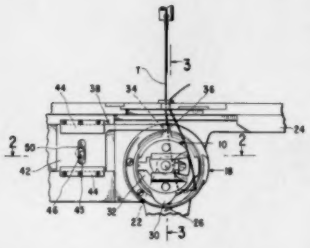
BOBBIN THREAD CASE OPENER

Josef Zocher, Haaren, Aachen, Fed. Rep. of Germany, assignor to The Singer Company, New York, N.Y.

Filed Dec. 22, 1977, Ser. No. 863,550

Int. Cl.[2] D05B *57/22*

U.S. Cl. 112—181 **3 Claims**



1. A bobbin thread case opener mechanism for a lock stitch sewing machine having a frame, an endwise reciprocatory thread carrying needle carried in said frame, a loop taker having a rotary path of motion in said frame cooperating with said needle, a bobbin case journaled relatively to said loop taker, and means for restraining rotation of said bobbin case including an abutment carried on said bobbin case and disposed radially of the rotary loop taker path of motion, a stop member for said bobbin case carried on said frame and constituting the sole rotation restraint for said bobbin case, said stop member being positioned for engagement with said abutment, and a means for imparting vibratory movement to said stop member relatively to said frame in a direction toward and away from said abutment at a frequency at least four times greater than the rate of rotation of said loop taker.

4,142,476

METHODS OF MAKING FEMININE HYGIENIC PADS

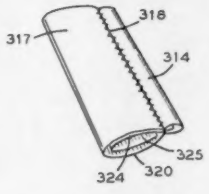
Shalom Z. Hirschman, 110-11 Queens Blvd., Forest Hills, N.Y. 11375

Division of Ser. No. 732,941, Oct. 15, 1976, Pat. No. 4,095,542.

This application Oct. 26, 1977, Ser. No. 845,553

Int. Cl.[2] A61F *13/18*

U.S. Cl. 112—262 **12 Claims**



1. A method of making feminine hygienic pads from a material of a predetermined width by folding said material in longitudinal folds providing a folded form,

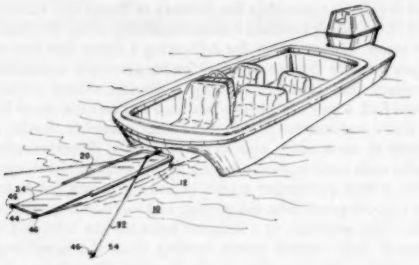
said folded form providing a first outer narrow panel and an outer opposite wider longitudinal second panel that abuts said first narrow panel,

stitching the edge of said first outer narrow panel longitudinally to said wider second panel providing a stitched form with an anterior narrow panel portion having an outer anterior leading edge and a wider posterior panel.

4,142,477
PORTABLE DOCK

Boyd E. Powers, 14216 Jalisco Rd., La Mirada, Calif. 90638

Filed Jul. 11, 1977, Ser. No. 814,637
Int. Cl.[2] B63B 5/24
U.S. Cl. 114—263 1 Claim



1. A portable boat dock which may be towed by a boat or alternatively moored at a shallow beach to the shore of the beach with a floating boat secured to the dock comprising

a flotatable hull, of generally rectangular shape in plan view, having a boat end and a shore end,

a generally flat gangplank deck fixed on the upper rim of said hull to form a substantially flat top surface,

anchoring means fastened to said shore end of said dock adjacent each side of the shore end of said hull, said anchoring means adaptable for detachable fastening to means secured to the shore,

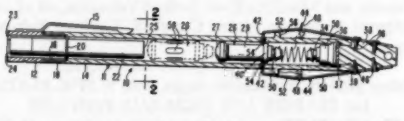
a fastener mounted at the boat end of said dock and extending above the top of the gangplank deck, which fastener is adaptable to be secured by cable means to both a boat floating in the water and to stake means on the shore so as to limit horizontal movement of the dock with respect to the shore, in which

the hull is formed with a flat bottom that tapers downwardly from the shore end of the dock for the greater part of the length of the hull so that the shore end of the dock may be positioned on a shore by the anchoring means, with the boat end of the dock floating in water adjacent the said shore of a depth sufficient to float a boat fastened to the fastener at the boat end of the dock.

4,142,478
ULTRASONIC SIGNAL GENERATING DEVICE

Robert J. Husman, San Jose, Calif., assignor to Sentry Products, Inc., San Jose, Calif.

Filed Nov. 16, 1977, Ser. No. 851,927
Int. Cl.[2] B06B 1/10
U.S. Cl. 116—137 A 2 Claims

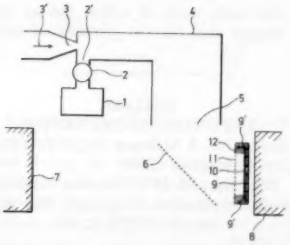


1. An acoustic transmitter device comprising: a tubular casing having a pair of interconnected sections, a first of the sections having an open end; a vibrator rod having a natural frequency and a pair of opposed, flat ends, said rod being provided with a ring thereon intermediate the ends thereof, said ring being coupled to the casing at the junction of the sections to suspend the vibrator rod in inwardly spaced relationship to the casing with one end of the rod near the open end of said first section so that, when the other end of the rod is struck, the rod will generate an acoustic signal at its natural frequency; a hammer in the second section and movable therethrough from a cocked position spaced from the vibrator rod, said hammer having an annular flange thereon intermediate the ends thereof; a coil spring within the second section and having one end coupled with the hammer and the opposite end secured to the second section, said coil spring being under compression when the hammer is in said cocked position; and a pair of leaf springs, each leaf spring being rigidly connected at one end thereof to the second section at a location thereon diametrically opposed to the connection of the other leaf spring, each leaf spring having an end leg, the second section having a hole for shiftably receiving each leg, respectively, the legs shiftably extending though respective holes and across the path of travel of the flange on the hammer for engaging and releasably holding the flange and the hammer in said cocked position, said second section having projection means thereon adjacent to and intermediate the ends of each leaf spring, respectively, for engaging the leaf spring and defining a fulcrum therefor, the leaf springs being yieldable toward the second section when manual pressure is applied to the leaf springs to cause pivoting of each leaf spring about its fulcrum to cause the corresponding leg to move outwardly of the respective hole and out of the path of the flange on the hammer to thereby permit release of the hammer and allow movement of the latter toward said triggered position and into striking engagement with the other end of the vibrator rod, the triggered position of the hammer after it has struck the vibrator rod being spaced from the vibrator rod, said second section having a slot therethrough for viewing the hammer when the latter is in the triggered position, said casing being sufficiently imperforate to prevent access to the interior of the casing so as to prevent immediate re-cocking of the hammer after it has been triggered.

4,142,479
MAGNETIC SEPARATORS AND APPARATUS FOR MAKING THE SAME

Junichi Yano, Tokai, and Isamu Eguchi, Nagoya, both of Japan, assignors to Daidotokushuko Kabushikikaisha, Nagoya, Japan

Filed Oct. 5, 1976, Ser. No. 729,917
Claims priority, application Japan, Oct. 6, 1975, 50/120445
Int. Cl.[2] B05C 5/02
U.S. Cl. 118—623 3 Claims



1. Apparatus for making a filter cell having a base and a plurality of fibrous filter elements secured to said base, comprising:

(i) a container for holding a plurality of discrete fibrous filter elements in random orientation, said container having an opening,

(ii) a feed conduit having a first end and a second end, and a lateral opening adjacent said first end, said container opening communicating with said lateral opening,

(iii) means, for delivering a stream of compressed air, communicating with said first end of said conduit,

(iv) a pair of spaced magnets for developing a magnetic field therebetween, said magnetic field having a zone in which there is a stronger magnetic force than in the remaining zone of the field, said magnets being disposed one at each side of said second end of said conduit, and

(v) means for supporting said base in a position between said magnets and closer to one of said magnets than to the other of said magnets and transverse to the magnetic lines of force extending between said magnets.

4,142,480
APPARATUS FOR DEVELOPING ELECTROPHOTOGRAPHIC COPYING MATERIALS

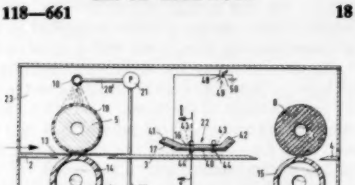
Rudi Schwandt, and Dieter Töpfer, both of Wiesbaden, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 7, 1977, Ser. No. 840,375

Claims priority, application Fed. Rep. of Germany, Oct. 9, 1976, 2645672

Int. Cl.[2] G03G *13/10*

U.S. Cl. 118—661 **18 Claims**



1. An apparatus for developing an electrophotographic copying material, comprising:

(a) a housing having opposite housing walls;

(b) means for feeding a copying material into said apparatus;

(c) means for applying toner to the copying material in said housing;

(d) means including a guide surface for supporting said copying material within said housing;

(e) a distributor roller having journals extending beyond the lateral surfaces thereof for distributing the toner over said copying material; and,

(f) means for adjustably mounting said distributor roller within said housing, said means comprising guide means in said opposite housing walls which receive the journals of said distributor roller, and a pair of movable wedge-shaped carriages, each of which has an inclined plane which engage and lift the journals of said distributor roller.

4,142,481
VAPORIFIC CARBURETOR

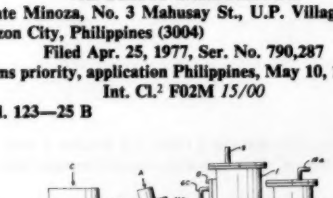
Clemente Minoza, No. 3 Mahusay St., U.P. Village, Diliman, Quezon City, Philippines (3004)

Filed Apr. 25, 1977, Ser. No. 790,287

Claims priority, application Philippines, May 10, 1976, 18413

Int. Cl.[2] F02M *15/00*

U.S. Cl. 123—25 B **11 Claims**



1. In a carburetor for an engine, the carburetor having a fuel feeder assembly, a water supply assembly, a mixer tube assembly, an evaporator tube assembly, means for feeding metered quantities of liquid fuel and water to said mixer tube assembly by way of said evaporator tube assembly, said mixer tube assembly being in communicating coupled relationship to the inlet manifold of the engine, the evaporator tube assembly being horizontally inclined and having upper and lower ends defining an inlet and an outlet respectively, means securing the inlet end of said evaporator tube to said fuel feed assembly and means securing the outlet end of said evaporator tube to said mixer assembly, the inlet being coupled communicatively with said fuel feeder assembly for delivery of liquid fuel thereto and said outlet being coupled communicatively with the interior of the mixer tube assembly for delivering a liquid fuel and water-vapor mixture thereto, the fuel feeder assembly comprising an auxiliary fuel tank for holding a predetermined volume of liquid fuel, a pair of siphon tubes, said siphon tubes each having an entry end interior of said fuel feeder assembly, needle valve means at each entry end to control flow therethrough, and outlet ends each communicating to said inlet of the evaporator tube, a heat exchanger assembly having means for receiving the exhaust gases from the engine, and surrounding said evaporator tube assembly at a location between the inlet and outlet thereof, first conduit means leading from the interior of the evaporator tube assembly at the location therealong which is surrounded by the heat exchanger assembly to the interior of the mixer tube assembly, an adapter tube connected to the lower end of said mixer tube for coupling said mixer tube assembly to the inlet manifold of the engine, said adapter tube containing a throttle valve, air inlet means formed in said evaporator tube assembly exterior of said mixer tube assembly and located in the vicinity of the outlet of said evaporator tube assembly for introducing air into said area thereof during operation of the engine and second conduit means upstream of said air inlet means and downstream of said first conduit means and leading from the interior of the evaporator tube assembly to the interior of the adapter tube, the mixer tube assembly having upper and lower chambers, said upper chamber including an air inlet, plate means separating said chambers and including wall means defining a venturi passage between said chambers, said first conduit means having its outlet interior of said venturi passage, said last outlet terminating in a cross-cut opening disposed in a plane substantially parallel to the direction of flow of air through said venturi passage and having a clearance of about one-eighth inch from said wall means, the quantity of fuel and water vapor passing through said first conduit means to said mixer tube being dependent upon the velocity of air flow through said venturi passage when the engine is in operation.

4,142,482
FEEDBACK EMISSION CONTROL FOR INTERNAL COMBUSTION ENGINES WITH VARIABLE REFERENCE COMPENSATION FOR CHANGE WITH TIME IN PERFORMANCE OF EXHAUST COMPOSITION SENSOR

Masaharu Asano, Yokosuka; Takeshi Fujishiro, Yokohama; Shigeo Aono, Seki; Akio Hosaka, Yokohama; Nobuzi Manaka, and Mituhiko Ezoe, both of Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Feb. 9, 1977, Ser. No. 767,133

Claims priority, application Japan, Feb. 9, 1976, 51-12244

Int. Cl.[2] F02B *3/08*; F02M *7/12*; F01N *3/08*

U.S. Cl. 123—32 EE **21 Claims**

1. An emission control apparatus for an internal combustion engine having means for supplying air and fuel thereto in a variable ratio and an exhaust gas sensor for generating an exhaust gas sensor signal representative of the concentration of an exhaust gas composition of the emissions from said engine, said exhaust gas sensor signal having a range of values varying between a high signal strength value and a low signal strength value depending on the sensed exhaust gas concentration, comprising:

mean-value detecting means for generating a mean-valued signal representative of a mean value of said exhaust gas sensor signal and normally having a range of values nar-

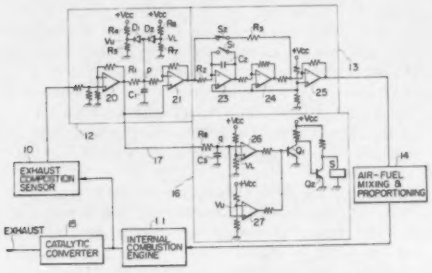
rower than the range of values of said exhaust gas sensor signal so long as said exhaust gas sensor signal is varying continuously;

differential amplifier means connected to receive said exhaust gas sensor signal and said mean-value signal for generating a differential amplifier signal representative of the deviation of said exhaust gas sensor signal from said mean value;

integral controller means receptive of said differential amplifier signal to integrate said deviation at a predetermined integration rate to generate a correction signal for application to said air-fuel supplying means;

level-detecting means for generating a range limit signal when said mean-value signal is outside of its normal range of values when said exhaust gas sensor signal remains at one of said high and low signal strength values for an extended period of time; and

means for disabling said integral controller means in response to said range limit signal.



4,142,483

OPERATION TIMING CONTROL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

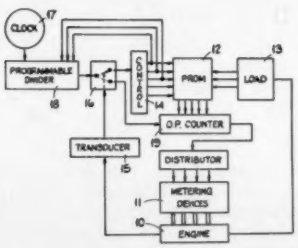
John M. Ironside, Birmingham, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Jun. 7, 1977, Ser. No. 804,308

Claims priority, application United Kingdom, Jun. 16, 1976, 24916/76

Int. Cl.[2] F02B *3/00*; F02P *5/04*

U.S. Cl. 123—32 EB **3 Claims**



1. An operation timing control system for an internal combustion engine comprising an engine shaft position transducer driven by the engine and producing a train of pulses each marking a specific angular position of the engine shaft, a fixed frequency clock pulse generator, a counter for counting pulses from the clock pulse generator, an empirically programmed digital read only memory having one set of input terminals connected to said counter, a further set of input terminals connected to a further transducer circuit associated with the engine, and a set of output terminals, an output circuit connected to the output terminals of the memory and a control circuit connecting the clock to the counter and the output circuit and also connected to the transducer whereby the counter is clocked by the clock pulse generator for a part of the cycle determined by the transducer and the output circuit is clocked by the clock pulse generator for another part of the operating cycle, characterised in that the control circuit includes a programmable frequency dividing circuit connected to the clock pulse generator and having divisor control input terminals connected to selective output terminals of the counter, whereby during said one part of the operating cycle the frequency at which the counter is clocked is varied in accordance with the count state of the counter and during said other part of the operating cycle the output circuit is clocked at a fixed frequency determined by the count state of the counter at the end of said one part of the operating cycle.

4,142,484

PISTON FOR INTERNAL COMBUSTION ENGINE

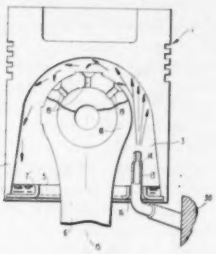
Hans W. Buhl, Stuttgart, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 1, 1976, Ser. No. 719,580

Claims priority, application Fed. Rep. of Germany, Sep. 5, 1975, 2539470

Int. Cl.[2] F01P *1/04, 3/06*

U.S. Cl. 123—41.35 **25 Claims**



1. A piston for internal combustion engines cooled by means of splash oil comprising:

a piston skirt having an inner surface defining an interior space having an arcuately curved upper end;

a connecting rod attached to said piston skirt within said interior space and having an upper end portion located within the arcuately curved upper end of said interior space;

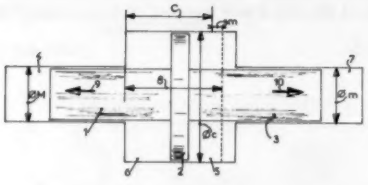
collecting trough means having an opening for passage of said connecting rod and arranged at the lower end of said piston skirt at least partially closing off said interior space; and

supplying means for directing a spray of cooling oil into said interior space wherein it is distributed by said arcuately curved upper end, and wherein said connecting rod is provided with feed channel means formed by a plurality of funnel-shaped inlet passages comprising a cone-shaped mouth leading to a cylindrical tubular section located in the upper end portion of said connecting rod for receiving cooling oil supplied by said supply means into the upper end of said interior space for directing it from said interior space into the connecting rod so as to provide wrist pin lubrication of an upper portion thereof.

4,142,485
METHOD AND DEVICE FOR ENSURING THE SAFETY IN A FREE PISTON MACHINE

Auguste F. Moiroux, 28 route de Dardilly, Ecully (Rhone), and Francois Bernard, 105 Cours du Docteur Long, Lyon 3°, both of France

Continuation of Ser. No. 611,114, Sep. 8, 1975, abandoned, which is a continuation of Ser. No. 376,995, Jul. 6, 1973, abandoned. This application Oct. 27, 1977, Ser. No. 846,081
Claims priority, application France, Jul. 7, 1972, 72.25655
Int. Cl.[2] F02B *71/00*
U.S. Cl. 123—46 R **1 Claim**

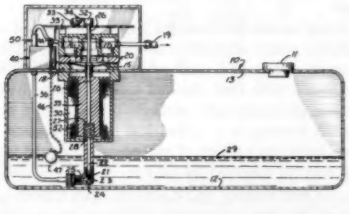


1. In an air-cooled diesel machine of the type having a clyinder and a variable stroke free piston disposed therein for reciprocation and wherein said piston has an engine portion, a bounce portion and a compressor portion disposed intermediate said engine portion and said bounce portion, said compressor portion of said piston being disposed in a portion of said cylinder having a diameter greater than the engine portion and the bounce portion of the cylinder in which the engine portion and bounce portion of said piston are disposed respectively, the improvement comprising constructing said piston and cylinder so that the ratio of the diameter of the compressor portion of the piston to the diameter of the engine portion of the piston is between 1.6 and 1.9, the ratio of the diameter of the bounce portion of the piston to the diameter of the engine portion of the piston is between 0.8 and 1.2 and the ratio of the maximum stroke of the free piston to the diameter of the engine portion of the piston is between 1.5 and 1.8 with the maximum stroke of the piston being shorter than the axial length of the compressor portion of said cylinder whereby if the piston travels beyonds the normal dead point in the direction of the bounce portion of the cylinder due to lack of sufficient pressure in the compressor portion of the cylinder, the piston will be returned with insufficient force to accomplish ignition of the fuel-air mixture in the engine portion of the cylinder and the machine will stop without any shock caused by contact of the ends of the piston portions with the respective portions of the cylinder.

4,142,486
FUEL-OIL MIXING APPARATUS FOR INTERNAL-COMBUSTION ENGINES

Joseph S. Schreier, S. 2718 Bates, Spokane, Wash. 99206

Filed Sep. 6, 1977, Ser. No. 830,440
Int. Cl.[2] F01M *3/00*
U.S. Cl. 123—73 AD **14 Claims**



1. A fuel-oil mixing apparatus for mixing and delivering oil and fuel to an internal combustion engine of the type requiring an oil-fuel mixture at its engine fuel intake, comprising:

an oil reservoir;

a fuel-oil expandable chamber assembly mounted to the oil reservoir and having an inlet valve, a delivery valve, and a displacement member movable alternately through a suction stroke and a delivery stroke, the inlet valve of said chamber assembly being adapted to be connected to an external fuel supply, the delivery valve of said chamber assembly being adapted to be connected to an engine fuel intake;

a positive displacement oil pump mounted to the oil reservoir and having an inlet valve, a delivery valve, and a displacement member movable alternately through a suction stroke and a delivery stroke, the inlet valve of said pump being in open fluid communication with the interior of the oil reservoir, the outlet valve of said pump being operatively connected to the inlet valve of said chamber assembly;

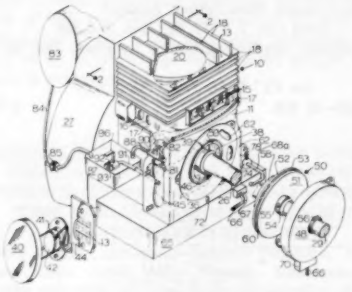
and common mechanical actuator means connected to the respective displacement members of said chamber assembly and pump for moving said displacement members in unison in an opposed tandem relationship, whereby one displacement member is moved through its suction stroke during movement to the other displacement member through its delivery stroke;

the ratio between the volume displacement of said pump relative to the volume displacement of said chamber assembly being equal to the desired volume ratio of oil to fuel at the delivery valve of said chamber assembly.

4,142,487
TWO-STROKE PISTON ENGINE

Tomas P. Somraty, 111 Cleeland Rd., No. 132, Pleasant Hill, Calif. 94523

Filed Apr. 29, 1977, Ser. No. 792,212
Int. Cl.[2] F02B *33/04*
U.S. Cl. 123—73 B **12 Claims**



1. A two-stroke piston engine of the type having a cylinder having a head, an open end, intake port means, and exhaust port means generally closer to said head than said intake port means, a piston having oil-sealing and compression rings near each end, a crankcase adjacent to and opening into the open end of said cylinder, and a rotatable shaft bearinged in and extending outside said crankcase having a crank joined to said piston by a connecting rod bearinged to said crank and to said piston, an intake manifold connected to and encasing said intake port means, and a fuel system having a fuel intake line, a bowl normally under atmospheric pressure, and a fuel supply line leading from said bowl to said intake manifold, said engine having, in combination therewith:

air inlet means having a throttle plate and check valve means for admitting air from the atmosphere when the atmospheric pressure is greater than the pressure on the other side of the check valve means,

first air conduit means connecting said air inlet means to said crankcase and for admitting air to said crankcase when the pressure inside the crankcase is below atmospheric pressure, as a result of said piston moving toward said head,

an oil reservoir separated from said crankcase,

oil metering means for metering oil from said reservoir into said air conduit means as said piston moves toward said head, so that the metered oil is mixed with air and carried thereby into said crankcase and into the open end of said cylinder, to lubricate bearings and piston rings therein, said crank having a throw greater than the distance between said oil-sealing and compression rings, the piston rings most distant from said head never moving past said intake port means or said exhaust port means, said air and oil being forced out from the crankcase into said first air conduit means as said piston moves away from said head, the pressure in said crankcase then operating to close said check valve means,

a rotary centrifuging filter in said first air conduit means for separating oil out from the air that leaves the crankcase, said filter having an inner periphery and an outer periphery and having inlet and outlet means at said peripheries such that air flowing from said first air conduit means into said crankcase enters said filter at said inner periphery, and leaves said filter at said outer periphery whence it passes to said oil metering means and from there into said crankcase, while air flowing from said crankcase back into said first air conduit means enters said filter at said outer periphery and leaves it at said inner periphery, the oil then being flung from said outer periphery,

oil return means for returning the oil from said separating means and from the bottom of said crankcase to said reservoir while leaving the air from the crankcase oil-free, and

second air conduit means for sending the oil-free air to said intake manifold via a venturi at the entrance to said intake manifold, there to draw in and mix with said fuel from said fuel supply line, which is connected to said venturi via a metering device, so that a mixtre of fuel and oil-free air passes to said intake port means at the time the piston opens said intake port means.

4,142,488

APPARATUS FOR PREVENTING EXCESSIVE RUNNING SPEED FOR INTERNAL COMBUSTION ENGINE, ESPECIALLY FOR MOTOR VEHICLES

Rudolf Steinecke, Weinstadt-Beutelsbach; Otto Gobke, Waiblingen, and Klaus Gern, Waiblingen-Bittenfeld, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 16, 1976, Ser. No. 742,344

Claims priority, application Fed. Rep. of Germany, Nov. 21, 1975, 2552186

Int. Cl.² F02D *37/00*; F16D *43/24*

U.S. Cl. 123—99 **10 Claims**

1. Apparatus for preventing overspeeding of an engine which is drivingly connected via a drive train to a load, said apparatus comprising:

engine speed detecting means,

and drive train interruption means responsive to said engine speed detecting means to automatically completely interrupt said drive train connection in response to engine speeds in excess of a predetermined set engine speed, whereby transmission of forces from said load to said engine to further increase the speed of the engine is prevented, wherein said drive train includes an hydraulically actuable clutch,

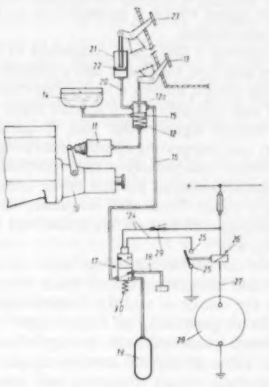
a first piston-cylinder arrangement for directly moving said clutch into and out of engaged positions,

a second piston-cylinder arrangement having its piston operably connected to a driver operated clutch pedal and including means for applying pressure to said first piston-cylinder arrangement to disengage said clutch when the clutch pedal is moved toward a clutch disengaging position,

and wherein said drive train interruption means includes:

pressure medium line means opening into a pressure chamber in said second piston-cylinder arrangement at one side of said piston, high pressure medium chamber means,

solenoid valve means interposed between said pressure medium line means and said high pressure medium chamber means and operable in a first valve position to communicate said high pressure medium chamber means with said pressure chamber so that said piston is moved to a position to disengage said clutch irrespective of the position of the clutch pedal, said solenoid valve means being operable in a second valve position to exhaust said pressure medium line means so that said piston is controlled only by the clutch pedal position,



and control circuit means for activating said solenoid valve means to said first valve position in response to engine speeds in excess of said predetermined speed.

4,142,489

ELECTRONIC ARRANGEMENT FOR CONTROLLING THE IGNITION OF AN INTERNAL COMBUSTION ENGINE

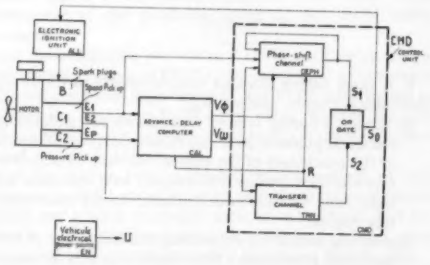
Christian Menard, Velizy-Villacoublay, France, assignor to Thomson-CSF, Paris, France

Filed Oct. 5, 1976, Ser. No. 729,870

Claims priority, application France, Oct. 9, 1975, 75 30894; Jul. 27, 1976, 76 22835

Int. Cl.² F02P *5/04*

U.S. Cl. 123—117 R **5 Claims**



1. An electronic ignition system for an internal combustion engine which comprises:

means for generating a train of high-voltage sparks to ignite the air/fuel mixture introduced into the cylinders of said engine; and

means, responsive to a d.c. control signal, for triggering said

spark generating means such that each spark therefrom occurs at a predetermined instant of time, said triggering means comprising:

a first transducer, coupled to said engine, for generating first and second pulse trains each proportional to the rotational speed of said engine and having a fixed phase relationship to the other and to the position of the pistons with respect to top dead center;

a frequency-to-voltage converter, receiving as its input the first pulse train from said first transducer, for generating a d.c. output signal which is proportional to the rotational speed of said engine;

an OR-gate having a first input connected to the first pulse train from said first tranducer and a second input;

an integrating circuit having a first input connected to the output of said OR-gate and a second input for receiving the d.c. output signal from said frequency-to-voltage converter, said integrating circuit generating a wave having a periodic, triangularly-shaped portion, the slope of said triangularly-shaped portion being controlled by the d.c. output signal from said frequency-to-voltage converter and triggered by said first pulse train from said first transducer; and

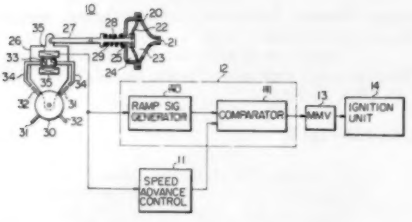
a comparison circuit having a first input connected to the output of said integrating circuit and a second input connected to the source of said d.c. control signal, said comparison circuit generating an output signal whenever the instantaneous value of said traingularly-shaped wave equals the value of said d.c. control signal, the output of said comparison circuit triggering said spark generating means and also serving to reset said triangularly-shaped wave generating means via the second input to said OR-gate.

4,142,490

HYBRID SPARK ADVANCE CONTROL APPARATUS FOR INTERNAL COMBUSTION ENGINES

Akio Hosaka, Yokohama, and Shigeo Aono, Seki, both of Japan, assignors to Nissan Motor Company, Ltd., Japan

Filed Oct. 19, 1976, Ser. No. 733,704
Claims priority, application Japan, Oct. 22, 1975, 50-126328
Int. Cl.[2] F02P 5/04
U.S. Cl. 123—117 R **2 Claims**



1. A spark timing advance control apparatus for an internal combustion engine, comprising:

an advance timing control mechanism for generating first electrical pulses at intervals related to speed of revolutions of the crankshaft of the engine, the time of occurrence of said electrical pulses with respect to a reference point in time being variable in dependence on the load exerted on said engine;

converting means for converting the frequency of said first electrical pulses into a first signal of which the magnitude varies with said frequency, and means for generating a second signal of which the magnitude varies in accordance with a predetermined input-output characteristic as a function of the magnitude of said first signal;

a plurality of operational amplifiers each having first and second input terminals and an output terminal, the first input terminal of each operational amplifier being connected through a first resistor to the output of said converting means and through a second resistor to the output terminal thereof, the first input terminal of each operational amplifier being further connected through a third resistor of the same value as the first resistor to a DC voltage source, the second input of each operational amplifier being connected to a reference potential and the output terminal of each operational amplifier being connected to an adder-subtractor circuit, the DC voltage and the resistance ratio of the first to second resistor of each operational amplifier being chosen to provide a line segment of a curve to be approximated;

a pulse-width converter responsive to said first electrical pulses from the advance timing control mechanism to generate a second pulse of which the duration is dependent on the magnitude of said second signal and on the interval between successive ones of said first electrical pulses; and

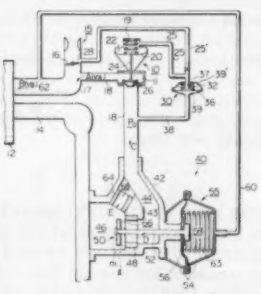
means for detecting the trailing edge of said second pulse to provide ignition in a cylinder of said engine.

4,142,491

EXHAUST GAS RECIRCULATION APPARATUS FOR AN INTERNAL COMBUSTION ENGINE

Masaru Hibino, Okazaki, and Michio Morishita, Toyota, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed May 24, 1977, Ser. No. 799,916
Claims priority, application Japan, Dec. 9, 1976, 51-147092
Int. Cl.[2] F02M 25/06
U.S. Cl. 123—119 A **8 Claims**



1. An exhaust gas recirculation apparatus for an internal combustion engine having an intake system and an exhaust system, said apparatus comprising:

means defining exhaust gas recirculation passageway means fluidly connecting the exhaust system with the intake system;

vacuum-operated pressure control valve means on said exhaust gas recirculation passageway means;

vacuum conduit means for transmitting a vacuum signal from said intake system to said vacuum-operated pressure control valve means;

means responsive to the pressure of the exhaust gas to be recirculated in said exhaust gas recirculation passageway means for controlling the level of the vacuum signal which is transmitted from said intake system to said vacuum-operated pressure control valve means through the vacuum conduit means; and

flow control means comprising a valve means including a valve seat arranged in said exhaust gas recirculation passageway means between said pressure control valve means and said exhaust system and including a valve member facing said valve seat, means responsive to vacuum in said intake system for controlling the flow area between said valve seat and said valve member so that said

flow area is varied in accordance with the vacuum in said intake system, and means defining an orifice of constant flow area in said passageway means, whereby the amount of exhaust gas directed to said pressure control valve means is varied in accordance with the load on the engine.

4,142,492

EXHAUST GAS PURIFICATION SYSTEM

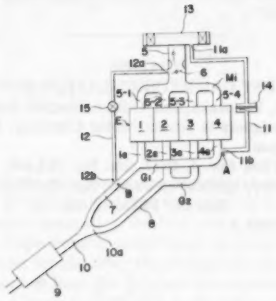
Kazuo Kobayashi; Katsuhiko Yokooku, and Kazumasa Nomura, all of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Sep. 26, 1977, Ser. No. 836,901

Claims priority, application Japan, Oct. 4, 1976, 51-133838[U]; Oct. 4, 1976, 51-133839[U]

Int. Cl.² F02M *25/06*

U.S. Cl. 123—119 A **11 Claims**



1. In an internal combustion engine having an exhaust system which includes first and second exhaust pipe groups each formed by collecting, at one junction, exhaust pipes for cylinders whose ignition sequences are not continuous, of the exhaust pipes respectively connected to a plurality of cylinders, a first connecting pipe having its one end connected to said first exhaust pipe group, a second connecting pipe having its one end connected to said second exhaust pipe group, said first and second connecting pipes being collected to communicate with each other at the other ends thereof, and a lead-out pipe having its one end connected to said collected other ends of said first and second connecting pipes and having its other end opened into atmosphere, an exhaust gas purification system for use in said internal combustion engine which comprises a secondary air supplying port formed at one end of a secondary air supplying passage and opened into one exhaust pipe group selected from said first and second exhaust pipe groups, and an upstream exhaust gas recycling passage having its upstream exhaust gas deriving port so provided as to derive exhaust gases from an exhaust line at downstream of a position of said secondary air supplying port for introducing the exhaust gases to an intake passage at an upstream of a carburetor throttle valve of said internal combustion engine.

4,142,493

CLOSED LOOP EXHAUST GAS RECIRCULATION CONTROL SYSTEM

John J. Schira, Westland; Alvin D. Toelle, Fenton, and Jack R. Phipps, St. Clair Shores, all of Mich., assignors to The Bendix Corporation, Southfield, Mich.

Filed Sep. 29, 1977, Ser. No. 837,657

Int. Cl.² F02M *25/06*

U.S. Cl. 123—119 A **65 Claims**

1. In an internal combustion engine having an intake system, an exhaust system, a conduit operatively coupling said exhaust system to said intake system for recirculating exhaust gases back to the intake system to reduce noxious emissions, and a valve means for regulating the exhaust gas recirculation (EGR) flow in said conduit, a closed loop EGR control system comprising:

means for measuring a first actual engine operating parameter and generating a first number indicative thereof;

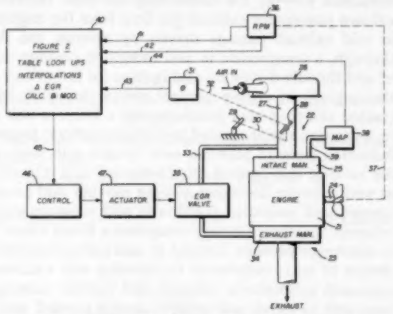
means for measuring a second actual engine operating parameter and generating a second number indicative thereof;

means for measuring a third actual engine operating parameter and generating a third number indicative thereof;

a first memory means for storing a look-up table of EGR values indicative of the desired position of said EGR valve means as a function of said first and second engine parameters, each memory location in said first memory means storing one of said desired EGR values and each memory location being accessed by a first dimension address and a second dimension address for reading the EGR value stored therein;

a second memory means for storing the look-up table of EGR values indicative of the desired position of said EGR valve means as a function of said first and third engine operating parameters, each memory location in said second memory means storing one of said EGR values, and each memory location being accessed by a first dimension address and a second dimension address for reading the EGR value stored therein;

means responsive to said first and second numbers for addressing said first and second memory dimensions of said first memory means and computing a first desired EGR



value corresponding to said first and second actual measured engine operating paramenters, and responsive to said first and third numbers for addressing said first and second memory dimensions of said second memory means and computing a second desired EGR value corresponding to said first and third actual measured engine operating parameters respectively;

logic means for comparing said first and second computed EGR values to determine a current EGR error value indicative of the positional error of said EGR valve means;

means for comparing said current EGR error value with a previously computed EGR error value used to determine the last positional adjustment of said EGR valve means to obtain the change in EGR error value required for correcting the position of said valve means at the next scheduled positional adjustment;

means for adding only a predetermined portion of said change in EGR error value to said previously computed EGR error value to update same so as to insure that the rate at which positional corrections are made to said valve means does not produce engine roughness and the like;

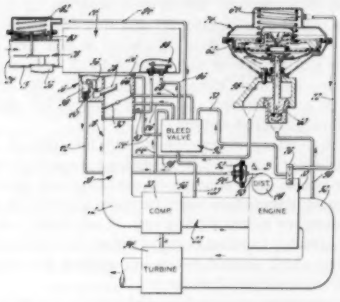
means responsive to said updated EGR error value for generating an EGR valve means positional control signal; and

control means responsive to said EGR valve means positional control signal for adjusting the position of said valve means so as to obtain optimal drivability while simultaneously insuring that noxious emissions are maintained below a predetermined acceptable level.

4,142,494
TURBOCHARGED ENGINE WITH VACUUM BLEED VALVE

Joseph M. Negri, Fenton, and Thomas F. Wallace, Grand Blanc, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 3, 1977, Ser. No. 838,588
Int. Cl.[2] F02B 33/00
U.S. Cl. 123—119 C 5 Claims

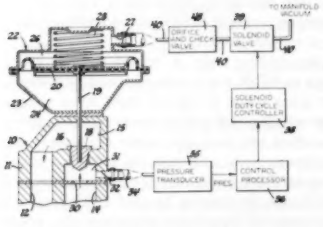


1. A turbocharged internal combustion engine including an induction passage for air flow to the engine, a throttle in said induction passage for controlling air flow therethrough, an exhaust passage for exhause gas flow from the engine, a turbine in said exhaust passage driven by exhaust gas flow therethrough, a compressor in said induction passage downstream of said throttle driven by said turbine for increasing air flow to the engine, an engine control device movable between retracted and projected positions, and a vacuum unit responsive to a vacuum signal created by subatmospheric pressure in said induction passage between said throttle and said compressor for moving said control device toward said retracted position as said pressure decreases and for moving said control device toward said projected position as said pressure increases, and wherein the improvement comprises a bleed valve responsive to discharge pressure created in said induction passage downstream of said compressor for causing said vacuum signal to approach atmospheric pressure and thereby causing said vacuum unit to move said control device toward said projected position when said discharge pressure rises above a selected value.

4,142,495
ENGINE EXHAUST GAS RECIRCULATION SYSTEM WITH PERIODIC RECALIBRATION OF EXHAUST BACK PRESSURE REFERENCE

John E. Lahiff, Farmington, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 5, 1977, Ser. No. 857,107
Int. Cl.[2] F02B 25/06
U.S. Cl. 123—119 A 1 Claim



1. In a motor vehicle combustion engine having an induction conduit, an exhaust conduit characterized by an exhaust pressure therein and an EGR conduit effective to selectively return a portion of the exhaust gas from the exhaust conduit to the induction conduit through a flow-restricting orifice and an EGR which define a chamber therebetween characterized by a control pressure therein, the flow of exhaust gas through the EGR conduit depending on the difference between the control pressure and the exhaust pressure, the improvement comprising:

means for sensing the control pressure;

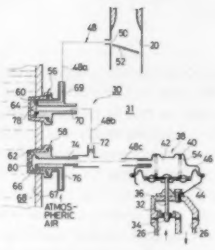
means effective to control the EGR valve in response to the sensed control pressure, a determined desired control pressure and a reference, said means being further effective to close the EGR valve during engine idle; and

means effective at selected occurrences of engine idle to store the valve of the sensed control pressure for use as the reference between said occurrences, whereby the EGR valve control means is periodically recalibrated during engine operation with reference to the exhaust pressure at engine idle.

4,142,496
EXHAUST GAS RECIRCULATION SYSTEM

Masaaki Saito, Yokosuka, and Akihiro Ohnishi, Kitamoto, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Apr. 4, 1977, Ser. No. 784,446
Claims priority, application Japan, Apr. 5, 1976, 51/37989
Int. Cl.[2] F02M 25/06
U.S. Cl. 123—119 A 10 Claims



1. An exhaust gas recirculation system in combination with an internal combustion engine, comprising:

an exhaust gas recirculation (EGR) passageway for providing communication between exhaust and intake systems of the engine for recirculating into the intake system exhaust gas emitted from the engine;

an EGR control valve disposed in the EGR passageway;

a diaphragm unit having

a fluid chamber to receive a suction vacuum of the engine;

a flexible diaphragm defining in part the fluid chamber and operatively connected to the EGR control valve so that the EGR valve controls the flow of recirculated exhaust gas in accordance with a vacuum in said fluid chamber;

first control means for causing the EGR control valve to close the EGR passageway during operation of the engine in which the temperature of the engine is below a first predetermined value and for having the EGR control valve control the flow of recirculated exhaust gas during operation of the engine in which the temperature of the engine is above said first predetermined value by stopping entry of the suction vacuum of the engine into the fluid chamber in response to said operations of the engine in which the temperature of the engine is below said first predetermined value and for allowing entry of the suction vacuum of the engine into the fluid chamber in response to said operations of the engine in which the temperature of the engine is above said first predetermined value; and

second control means for having the EGR control valve

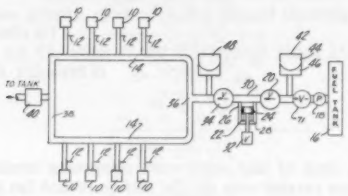
reduce the flow of recirculated exhaust gas to a proper value during warming-up operation of the engine in which the temperature of the engine is between said first and a second predetermined value by reducing the suction vacuum admitted into the fluid chamber in response to the warming-up operation of the engine.

4,142,497

FUEL PRESSURE BOOSTER AND REGULATOR

E. David Long, Elmira, N.Y., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Nov. 6, 1975, Ser. No. 629,351
Int. Cl.[2] F02M *59/16*
U.S. Cl. 123—139 AN **20 Claims**



1. In a fuel injection system for an internal combustion engine having: at least one fuel injector; a fuel tank; a fuel supply pump; a conduit connecting the fuel tank to said at least one injector; the improvement comprising: an engine driven fuel pressure booster for elevating the pressure at which the fuel is supplied to said at least one injector to a substantially higher pressure than a lower fuel pressure at the output of said system fuel supply pump, said pressure booster comprising: a pair of uni-directional valve means connected in said conduit to prevent fuel flow from said at least one injector toward the tank and isolate the high pressure maintained by the pressure booster from the low pressure maintained by the system fuel supply pump; a variable volume chamber having a cam actuated replenishment stroke and connected to the conduit between the uni-directional valve means; mechanical means including a spring for urging said variable volume chamber into a condition of reduced volume so as to maintain the pressure in the conduit between the uni-directional valve means closer to the tank and said at least one fuel injector at a pressure higher than the vaporization pressure of said fuel, the volume reduction of said chamber produced by said reduced volume condition being small relative to the total volume of said chamber; and means for maintaining instantaneous pressure in said variable volume chamber at a pressure level sufficiently high to prevent vaporization of the fuel during the replenishment stroke.

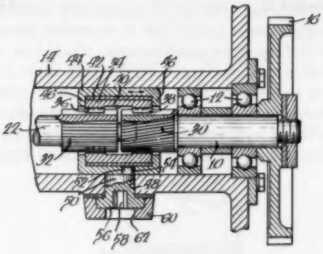
4,142,498

FUEL INJECTION PUMP TIMING MECHANISM

James T. Hammond, Tremont, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Jan. 17, 1977, Ser. No. 759,682
Int. Cl.[2] F02M *39/00*
U.S. Cl. 123—139 AP **4 Claims**

1. In a fuel pump construction, the combination of:
a driven shaft having means thereof for actuating a fuel pump for an internal combustion engine;
a driving shaft adapted to be driven by an engine proportionally to engine speed;
said shafts having aligned, toothed ends in close adjacency, the lead of the teeth on said ends being dissimilar;
a toothed coupling interconnecting said ends and axially movable thereon and rotatable with said shafts;
a collar rotatably receiving said coupling and restraining said coupling against axial movement;
means, including a manually and selectively operable actuator, for axially adjusting the position of said collar and for holding said collar in a desired position of adjustment;
a housing containing said shafts, coupling and collar;
means whereby access to said actuator may be achieved from the exterior of said housing;



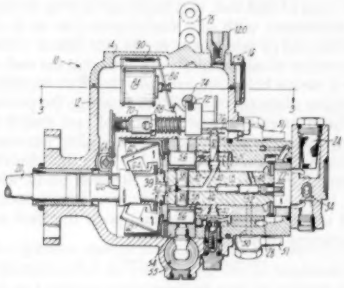
a groove in the radially outer surface of said collar; and
said adjusting and holding means comprises an element journalled in said housing adjacent said collar with a projection extending into said groove, said projection being offset from the axis of rotation of said element.

4,142,499

TEMPERATURE COMPENSATED FUEL INJECTION PUMP

Daniel E. Salzgeber, Windsor, Conn., assignor to Stanadyne, Inc., Windsor, Conn.

Filed Sep. 30, 1977, Ser. No. 838,314
Int. Cl.[2] F02D *1/04*
U.S. Cl. 123—140 J **11 Claims**



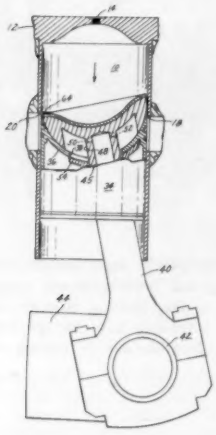
1. In a fuel injection pump for an internal combustion engine, a metering valve adjustable in opening and closing directions for variably metering the fuel delivered by the pump to the engine, an engine speed responsive governor for adjusting the metering valve by providing an increasing force with increasing speed to urge the metering valve in its closing direction, said governor including an idle speed control spring providing a biasing force to urge the metering valve in its opening direction, and means for setting the bias of the idle spring to establish the idling speed of the engine, the improvement comprising a bi-metal means interposed between the governor and the idle spring to increase the biasing force of the idle spring as the temperature of the pump increases or decreases thereby to maintain the idle speed of the engine under widely varying temperature conditions.

4,142,500

TWO-STROKE ENGINE AND DIRECT THRUST PISTON

Allen V. C. Davis, 5600 Alta Canyada Rd., La Canada, Calif. 91011

Filed Apr. 12, 1977, Ser. No. 786,876
Int. Cl.[2] F02F 1/00
U.S. Cl. 123—193 P **12 Claims**



1. In combination:

a housing having cross ports for inlet and exhaust; and a piston including:

sealing sleeve means having face-to-face sealing and sliding engagement with the housing;

a connecting rod extending into said housing and through said sleeve means;

and a head secured to the inner end of said rod,

said head undergoing undulating movement as the other end of the rod rotates, means intercoupling said head and said sleeve means for simultaneously longitudinally slidable movement in unison during rotation of said other end of said rod, said head undulating during sliding movement with said sleeve means so as to extend past the end of said sleeve means, the lateral surface of the portion of said head that extends past the end of said sleeve means being substantially the same dimension as the outer diameter of said sleeve means, the portions of the head extending past the end of said sleeve means being operative in one direction of sliding movement to confront the exhaust ports and in the other direction of sliding movement to confront the inlet ports, whereby said head during its undulating movement cooperates with said sleeve means and said ports to effect sequential porting of said ports.

4,142,501

INTERNAL COMBUSTION ENGINE HAVING IMPROVED CYLINDER HEAD CONFIGURATION

Yoshimasa Hayashi, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

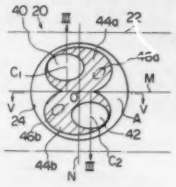
Filed Jan. 31, 1977, Ser. No. 764,179
Claims priority, application Japan, Feb. 3, 1976, 51-10591
Int. Cl.[2] F01F 1/00
U.S. Cl. 123—193 H **23 Claims**

1. An internal combustion engine including a cylinder block having therein a cylinder having a center axis in which a piston is reciprocally movably disposed, comprising:

a cylinder head secured to the cylinder block and being formed with a concave surface, said concave surface closing one end of the cylinder and forming part of a sphere, having a vertex, with its center at a point on the central axis of the cylinder, said cylinder head being formed on the spherical surface with two flat portions protruded from the level of the spherical surface, the planes of the two flat portions intersecting each other at a location between the vertex of the spherical surface and the level at which the cylinder head is secured to the cylinder block;

a combustion chamber defined by the spherical surface, the two flat portions of the cylinder head and the top of the piston; and

intake and exhaust valve heads seatable, respectively, on intake and exhaust valve seats, the valve seats being, respectively, formed at the two flat portions of said cylinder



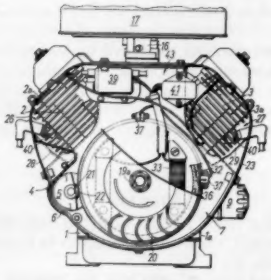
head, each of said valve seats comprising annular flat surfaces parallel with the flat surface of said flat portion on which it is formed, said intake and exhaust valve heads being oppositely offset with respect to a longitudinal vertical plane passing through the center axis of the cylinder and parallel with the longitudinal axis of the cylinder block, the centers of said intake and exhaust valves lying opposite to each other with respect to a lateral vertical plane perpendicular to the longitudinal vertical plane and passing through the center axis of the cylinder, and spaced apart from the lateral vertical plane.

4,142,502

ENGINE AND COMPONENT ARRANGEMENT

Keiichi Nakano, and Koji Nakai, both of Sakaishi, Japan, assignors to Kubota, Ltd., Osaka, Japan

Filed Apr. 8, 1977, Ser. No. 785,831
Claims priority, application Japan, Jan. 24, 1977, 52-7143
Int. Cl.[2] F02F 7/00
U.S. Cl. 123—195 A **8 Claims**



1. An engine assembly, comprising:

a V-shaped engine having a main rotating shaft and a crankcase, and including a pair of free standing cylinders with cooling fins thereon arranged in the letter V on the opposite sides of said crankcase, whereby partially enclosed spaces are formed on both sides of said crankcase between the crankcase and the inclined undersides of said cylinders, and a valley-shaped space is formed between said cylinders on top of said crankcase, said valley-shaped space being open at the top and extending longitudinally of said crankcase with no intrusion thereinto by any portion of the crankcase or by operating engine elements associated with said cooling-fin equipped cylinders; and

auxiliary components for said engine, said auxiliary components being mounted within said partially enclosed spaces beneath said cylinders and within said valley-shaped space on top of said crankcase between said cooling-fin equipped cylinders, to provide an engine assembly of minimum overall dimensions, and to protect said components.

4,142,503

SIGNAL INDICATING DEVICE ON INTERNAL COMBUSTION ENGINES

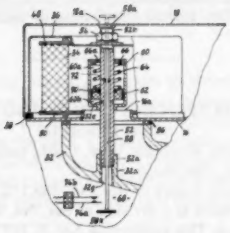
Ernst Hatz; Heinz Eibl, and Erich Absenger, all of Ruhstorf, Fed. Rep. of Germany, assignors to Motorenfabrik Hatz GmbH & Co. KG, Ruhstorf, Fed. Rep. of Germany

Filed Oct. 31, 1977, Ser. No. 847,034

Claims priority, application Fed. Rep. of Germany, Nov. 10, 1976, 2651257

Int. Cl.[2] F02B *77/08*; B01D *46/00*; F02M *35/06*

U.S. Cl. 123—198 D **4 Claims**



1. In a device for producing a signal indication of a certain limit value in the degree of feeding air to an internal combustion engine, said engine having a cooling-air blower for moving cooling air into a storage chamber which surrounds the engine body which is to be cooled and into an air intake pipe, the improvement comprising wherein the device includes cylinder means, piston means movable in said cylinder means, movable signal means movable in response to a movement of said piston means, and means for loading said piston means on one side thereof by the pressure in the said air intake pipe and on the other side thereof by the pressure in said storage chamber of the engine.

4,142,504

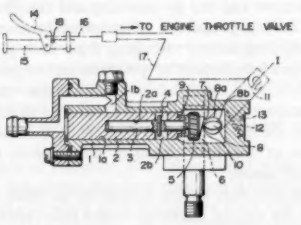
LUBRICATING OIL PUMP FOR TWO CYCLE INTERNAL COMBUSTION ENGINES

Ryoji Uda, and Tomoya Kimura, both of Kakogawa, Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Jan. 18, 1977, Ser. No. 760,325

Int. Cl.[2] F02B *517/08*

U.S. Cl. 123—198 D **8 Claims**



1. Lubricating oil supply means for a two cycle internal combustion engine, said supply means comprising variable displacement type oil pump means for pumping oil, control means for controlling the displacement of the oil pump means, said control means including a control element movable from a maximim displacement position through a minimum displacement position to a third position where the displacement of the pump means is greater than that in the minimum displacement position, means for biasing the control element toward the third position, stop means for limiting the control element to move under influence of the biasing means beyond the third position, and means adapted to be responsive to an operating condition of the engine for moving said control element against said biasing means so that the control element is in the minimum displacement position under an idling operating condition of the engine and the displacement of the oil pump means is increased in accordance with an increase in engine output.

4,142,505

IGNITION SYSTEM MEANS FOR A ROTARY PISTON ENGINE

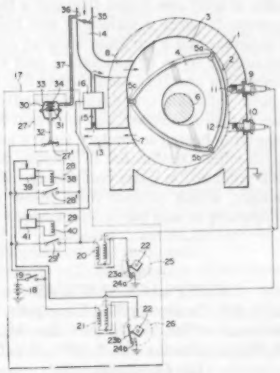
Takashi Inoue, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Apr. 28, 1977, Ser. No. 791,684

Claims priority, application Japan, Dec. 27, 1976, 51-159178

Int. Cl.[2] F02B *53/12*

U.S. Cl. 123—211 **8 Claims**



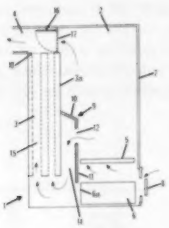
1. An ignition system means for a rotary piston engine having a throttle valve for controlling the air intake to the engine, leading and trailing ignition plugs, and an exhaust gas recirculation system including an exhaust gas recirculation control valve, said ignition system means comprising a first ignition circuit connected to operate said trailing ignition plug, a second ignition circuit connected to operate said leading ignition plug, and a control means including a first detecting means which detects the opening of said throttle valve, a second detecting means which detects the rotational speed of the engine, and a third detecting means which detects the opening of said exhaust gas recirculation control valve, said control means being connected to selectively interrupt said first ignition circuit in such a manner that the sparking operation of said trailing ignition plug is stopped when the throttle opening is in a medium range for effecting a low load operation of the engine, the engine rotational speed is below a predetermined relatively low value and the exhaust gas recirculation ratio is below a predetermined relatively moderate value.

4,142,506

HEATING APPLIANCES

William H. D. Morris, 64 Biscayne, Malahide, County Dublin, and William J. R. Couchman, 33 Foxrock Ave., Dublin 18, both of Ireland

Filed Aug. 17, 1977, Ser. No. 825,428
Claims priority, application Ireland, Aug. 18, 1976, 1830/76
Int. Cl.[2] F24C *13/00*
U.S. Cl. 126—5 **5 Claims**



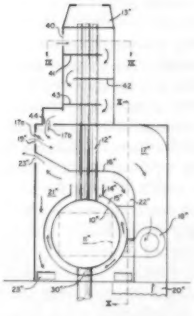
1. A solid fuel heating appliance comprising a combustion chamber containing a firebed for supporting the solid fuel and an ashpit below the firebed, a boiler adjacent the combustion chamber, and a flue system for the conveyance of combustion gases from the combustion chamber, said flue system comprising two different routes for the conveyance of combustion gases and damper means which may be selectively positioned to cause the gases to pass predominantly along a selected one of said two different routes, said two different routes comprising a first route which by-passes said boiler and a second route which includes at least one boiler flue and a further flue defined by the space between a surface of said boiler facing the combustion chamber and a partition member positioned adjacent the said surface so as to maintain a part thereof spaced from the combustion chamber, said further flue being in communication both with said combustion chamber, through an opening in the partition member, and with said boiler flue, and means for supplying heated secondary air at a level above said firebed so as to effect combustion of volatile components remaining in the combustion gases comprising a channel in said partition member, which extends from below the firebed to adjacent the opening in said partition member.

4,142,507

FIREPLACE SYSTEMS

John J. Stanko, 327 Coraopolis Rd., Coraopolis, Pa. 15108

Continuation-in-part of Ser. No. 761,607, Jan. 24, 1977, Pat. No. 4,098,257. This application Jul. 5, 1977, Ser. No. 813,078
Int. Cl.[2] F24B *7/00*
U.S. Cl. 126—121 **4 Claims**



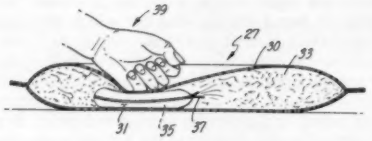
1. A fireplace heating system comprising a fireplace box having a fireplace opening therein, a heat chamber surrounding said box, a plurality of spaced generally vertically extending flues connected to said fireplace box and holding said box suspended generally centrally of said heat chamber and spaced from the walls of said heat chamber, said flues being adapted to carry the exhaust gases from the fireplace box, a hot air distribution duct connected to said heat chamber and surrounding the said flues over a portion of their length, said distribution duct having discharge vent means into the room being heated, a pre-heat chamber spaced from the heat chamber and the hot air distribution duct and surrounding said flues over a second portion of their length, a cold air inlet connected to said pre-heat chamber, a blower connected to said pre-heat chamber on the side of the pre-heat chamber opposite the cold air inlet receiving pre-heated air passing around the second portion of said flues from said pre-heat chamber for delivery to the heat chamber, chimney means connected to said flues receiving exhaust gases therefrom and supporting said flues and fireplace box and a preliminary pre-heat chamber extending vertically lengthwise of a stack above the pre-heat chamber, an intake adjacent its top end, an outlet connected to said pre-heat chamber and the flues extend lengthwise of said preliminary pre-heat chamber.

4,142,508

METHOD FOR SPLICING CABLES AND HOT PACK FOR USE THEREIN

Susan S. Watson, Mountain View, Calif., assignor to Kay Laboratories, Inc., San Diego, Calif.

Continuation-in-part of Ser. No. 585,172, Jun. 9, 1975, abandoned, which is a division of Ser. No. 479,844, Jun. 17, 1974, abandoned. This application Apr. 5, 1977, Ser. No. 784,700
Int. Cl.[2] F24J *1/00*
U.S. Cl. 126—263 **36 Claims**



1. A portable heat source, including:
a first sealed container;
a second container disposed in the first container;
first chemical means disposed within the first container exteriorly of the second container;
second chemical means disposed within the first container interiorly of the second container, the second chemical means including a small amount of water as an intrinsic impurity, the second chemical means having properties when mixed with the first chemical means of reacting exothermically with the first chemical means to produce by-products and to generate heat as a result of such chemical reactions and the by-products and the first chemical means having properties of reacting exothermically at increased temperatures resulting from such generation of heat to produce further by-products and to generate additional heat as a result of such exothermic reactions, the small amount of water having properties of reacting with the first chemical means to facilitate the initiation of the reaction of the first chemical means with the second chemical means;
the second container having properties for being ruptured to release the second chemical means into contact with the first chemical means to permit the mixing of the first chemical means with the second chemical means and the exothermic reaction of the first and second chemical means and the subsequent exothermal reaction of the by-products and the first chemical means.

4,142,509
SOLAR COLLECTOR COMPRISING AN EVACUATED COVER

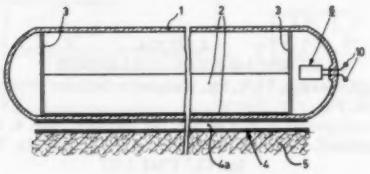
Wilhelm Hermann; Horst Horster, both of Roetgen; Johann Schroder, and Faramarz Mahdjuri, both of Aachen, all of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 1, 1977, Ser. No. 820,414

Claims priority, application Fed. Rep. of Germany, Aug. 5, 1976, 2635262

Int. Cl.² F24J 3/02

U.S. Cl. 126—270 **6 Claims**



1. A solar collector, which comprises an absorber provided with at least one duct for transferring heat, obtained from solar radiation incident on the absorber during operation, to a heat transport medium in the duct, a cover thermally insulating the absorber from the surroundings and consisting of at least one sealed and evacuated transparent tube, and means for supplying hydrogen to and extracting hydrogen from the cover tube.

4,142,510
SOLAR HEATER

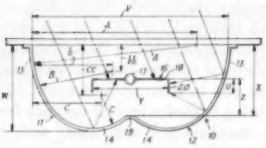
John G. Hare, Beckenham, and Ronald D. Leaver, Swanley, both of England, assignors to Fortress Engineering Limited, London, England

Filed Jul. 6, 1977, Ser. No. 813,305

Claims priority, application United Kingdom, Jul. 9, 1976, 28628/76

Int. Cl.² F24J 3/02

U.S. Cl. 126—271 **2 Claims**



1. A solar heater comprising:

(a) a concave reflector having a reflecting surface consisting of two interconnecting portions, each portion in section being of a compound curvature having a parabolic region merging with a logarithimic spiral, disposed within the space defined by the reflector,

(b) a duct for receiving and conveying a heat transfer medium,

(c) first pair of radiation absorbing plates attached to said duct by which the absorbed radiation is conducted to said duct and extending laterally one on each side of the central axis of the reflector and symmetrically therewith, and

(d) second pair of radiation absorbing plates attached substantially perpendicularly respectively to the distal edges of said lateral plates and extending toward acid reflector, wherein said reflector and said first and second plates are so dimensioned that the area of the aperture of the reflector to the surface area of the first and second plates for exposure to direct radiation is in the ratio of between 2:1 and 1:1.

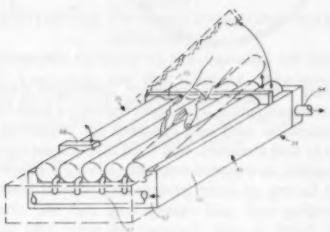
4,142,511
SOLAR RADIATION COLLECTOR DEVICES AND SYSTEMS

Ralph O. Doughty, Bedford, and Donald W. Goodwin, Fort Worth, both of Tex., assignors to General Dynamics Corporation, Fort Worth, Tex.

Filed May 20, 1977, Ser. No. 798,951

Int. Cl.² F24J 3/02

U.S. Cl. 126—271 **21 Claims**



1. A solar energy collector substantially of the non ray-concentrating type comprising:

(a) a solar energy collecting chamber in the form of an elongated hollow tube having closed ends, the chamber adapted to receive and have absorbed therein a high degree of solar radiation incident thereon;

(b) the chamber having a continuous, rigid, hermetically sealed boundary wall defining an interior space adapted to maintain a rarified atmosphere environment therein of the order of mild to high levels of vacuum and the wall capable of sustaining resulting atmospheric pressure loads thereon;

(1) said chamber boundary wall having a solar spectrum transparent window portion along the length of said tube for transmission therethrough of a high proportion of the solar radiation incident on said window portion into said interior space without substantial concentration or focusing of said rays; and

(2) a solar energy collection portion of said boundary wall along the length of said tube generally opposite said window wall portion for collecting and transferring energy derived from said transmitted radiation by heat conduction through said collecting wall portion to a heat transfer fluid passed externally of said chamber;

(c) the chamber containing a selective solar spectrum absorptive surface adapted to absorb a high proportion of the solar radiation received thereon and convert it to thermal energy and transfer it to said collecting wall portion;

(d) the absorptive surface having a solar radiation absorptivity substantially greater than its emissivity of long wave infrared radiation; and

(e) a rarified atmosphere environment contained within said chamber to substantially eliminate convective heat transfer from said absorptive surface to said transparent window portion.

4,142,512
SOLAR VAPORIZING CHAMBER

Darrell R. Brown, 2558 NW. 19th St., Oklahoma City, Okla. 73107

Filed Oct. 12, 1976, Ser. No. 731,233

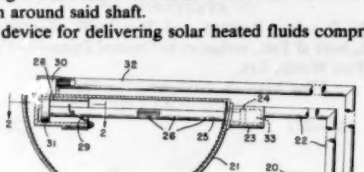
Int. Cl.² F24J 3/02

U.S. Cl. 126—271 **9 Claims**

1. A device for delivering solar heated fluids comprising: a

solar heating chamber, a pressure releasable vapor outlet means in communication with said chamber, a fluid inlet means in communication with said chamber for supplying vaporized fluids to said chamber, said solar energy vaporizing chamber including a thermostatic regulating means, said regulating means including a chamber shield means, said shield means including a shaft and a rotatable shield mounted thereon for rotation around said shaft.

2. A device for delivering solar heated fluids comprising: a



solar heating chamber, a pressure releasable vapor outlet means in communication with said chamber, a fluid inlet means in communication with said chamber for supplying vaporizable fluids to said chamber, said fluid inlet means comprising a piston assembly, said piston assembly having a piston rod, said piston rod having an inner passageway with at least one port communicating with said passageway and said chamber for delivering fluids to said chamber whereby said vaporizable fluids are vaporized and exit from said chamber through said outlet means.

4,142,513

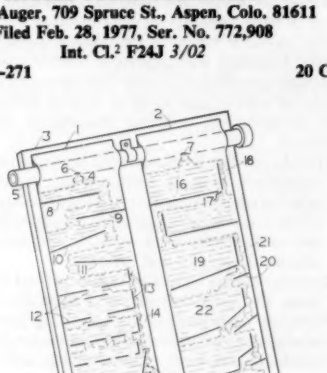
HYBRID SOLAR COLLECTOR

Raymond N. Auger, 709 Spruce St., Aspen, Colo. 81611

Filed Feb. 28, 1977, Ser. No. 772,908

Int. Cl.[2] F24J *3/02*

U.S. Cl. 126—271 **20 Claims**



1. A solar energy collecting device carrying a pressurizing, continuously flowing liquid for absorbing solar heat energy as the liquid flows through the device, comprising:

a pressurizing, continuously flowing liquid;

flexible tube means having an inlet located at an upper end thereof for receiving said liquid and an outlet located at a lower end thereof for discharging said liquid, said tube means includes a pair of thin, elongated, opposed, generally parallel side walls interconnected along side edges thereof to provide an enclosed passageway for carrying said liquid as it flows from said inlet to said outlet;

said side walls having means interconnecting said side walls for a portion of the distance between said side edges to divert said liquid laterally across said tube means during a portion of its travel from said inlet to said outlet;

means for supporting said tube means so that said liquid flows from said inlet to said outlet;

means for absorbing the solar energy overlying said tube means and contiguous therewith so that the energy received by said absorbing means is conducted to said pressurizing liquid flowing through said tube means; and

means supplying liquid to be heated to said inlet and means to remove heated liquid from said outlet.

4,142,514

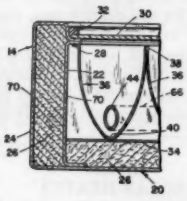
SOLAR HEAT COLLECTOR

Alwin B. Newton, York, Pa., assignor to Solation Products, Inc., York, Pa.

Continuation-in-part of Ser. No. 657,883, Mar. 4, 1976, abandoned. This application May 3, 1977, Ser. No. 793,380

Int. Cl.[2] F24J *3/02*

U.S. Cl. 126—271 **9 Claims**

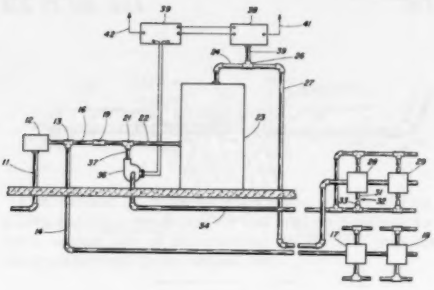


1. A solar heat collector comprising in combination, a frame including opposite parallel side panels, a sinuous tube system having parallel straight sections elliptical in cross-section and spaced transversely apart substantially even distances within a common plane and the ends of said straight sections being connected by reversely turned end portions respectively supported by said side panels of said frame, inlet means at one end of said tube system and outlet means at the opposite end of said tube system, said sinuous tube system being adapted to contain heat-transfer fluid, similar parallel channel-shaped reflector members extending stationarily along each of said straight sections of said tube and having a curved apex and opposite side reflecting surfaces extending therefrom adjacent opposite sides of said elliptical straight tube sections adapted to reflect solar rays onto said tube sections and said elliptical straight tube sections being spaced a limited distance from the apex of said reflector members but coincident with the focal axes thereof and the major axis of said tube sections being coincident with a plane bisecting said reflector members, said reflecting surfaces in cross-section being generated surfaces comprising the opposite continuously smoothly curved sides of a modified parabola in which the midportions of said curved sides are spaced apart a limited distance greater than the opposite sides of a true mathematical parabola, said spacing on a line extending through the center of said elliptical straight tube sections transversely to said bisecting plane being substantially 1.05 times the width of a true parabola along said transverse line and the outer ends of said reflecting surfaces being coincident with the corresponding outer ends of a true parabola at a distance greater than twice the major axis of the tube section beyond the apex of the reflector members but not in excess of three times said distance, whereby said reflector members are adapted in use to reflect solar rays onto said tube system as the sun varies its position above and below the centerline of said channel-shaped reflector members to utilize heat from solar rays as much as possible during daylight hours.

4,142,515
TIMED WATER RECIRCULATION SYSTEM

Loren E. Skaats, 3317 E. 9th St., Indianapolis, Ind. 46201

Filed Aug. 22, 1977, Ser. No. 826,302
Int. Cl.[2] F24H *1/00*; F04B *49/00*
U.S. Cl. 126—362 4 Claims



1. In a hot water distribution system having a pressure-regulated input cold water line, a water heater coupled from said input line, and an output hot water line coupled from the water heater to a plurality of remote hot water service locations, the improvement which comprises:

an electrically operated recirculation pump;

recirculation water lines coupled from the remote service locations to the recirculation pump;

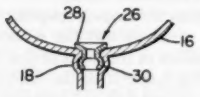
a return water line from the output of the recirculation pump to the water heater;

pressure switch means responsive to pressure in the output hot water line, timer operated switch means, and circuit means connecting both of said switch means and said pump for energizing said pump in response to a predetermined pressure decrease in said output hot water line, subsequently deenergizing the pump after a predetermined time interval and thereafter preventing reenergization of said pump until said pressure switch responds to a predetermined pressure increase in said output hot water line.

4,142,516
URETHRAL CONTRACEPTION DEVICE AND METHOD OF APPLYING SAME

Edwin L. Adair, 7850 Platte Canyon Rd., Littleton, Colo. 80120

Filed May 11, 1976, Ser. No. 685,281
Int. Cl.[2] A61B *19/00*; A61M *29/00*
U.S. Cl. 128—1 R 6 Claims



1. Apparatus for preventing the normal ejaculation of semen from a human male urethra into a vagina of a human female during coitus, said apparatus comprising:

an arcuate, deformable ring-like member positionable within a male bladder sphincter which is normally closed to the urethra during ejaculation for retaining the sphincter open so that semen may by-pass to the bladder during ejaculation from which it may later be voided, said member being deformable prior to being installed to a sufficiently small size to be inserted in the bladder sphincter, the member then being expandable due to its memory and tending to return toward its original shape, the shape after expansion being a substantially closed ring of a size limited by the bladder sphincter, said member including;

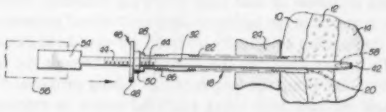
first means positionable within the bladder adjacent the bladder sphincter for preventing outward movement therefrom into the urethra, and

second means spaced from said first means and engageable within and by the bladder sphincter for preventing inward movement thereof into the bladder so that said device will remain locked within the bladder sphincter against movement therefrom.

4,142,517
APPARATUS FOR EXTRACTING BONE MARROW SPECIMENS

Elvia E. Contreras Guerreor de Stavropoulos, AP 80249, Caracas 108, Venezuela, and Stamatios M. Stavropoulos, 2277 Live Oak Dr. W., Los Angeles, Calif. 90068

Filed Jul. 23, 1976, Ser. No. 708,162
Int. Cl.[2] A61B *10/00*
U.S. Cl. 128—2 B 5 Claims



1. A device for extracting marrow from a bone, comprising:

a tubular guide having an inner and outer end,

external threads on said guide adjacent said inner end,

said guide having a cutting edge on its inner end adapted to cut through the skin and to penetrate the bone surface and to aid in holding the guide in place in the bone,

a guide depth guard having internal threads engaged with said external threads adjacent said inner end, said guide being adapted to indicate and limit the desired length of insertion of the guide to penetrate the bone,

said depth guard being rotatable on said guide toward and away from said inner end and having means close to the skin to be gripped for insertion of the guide into the skin and bone,

said depth guard being adapted to abut the skin and prevent additional penetration of the guide when the guide has been inserted to the selected depth,

a hollow needle having a conical inner end having a cutting edge and an outer end engaged with rotation means for rotation thereby, said conical inner end having an axially directed opening in said inner end within said cutting edge to receive and retain marrow therein,

said needle being slidably fitted within said guide with its inner end adjacent the inner end of said guide when said guide has penetrated the bone,

said needle having its outer end extending outwardly of the outer end of the guide,

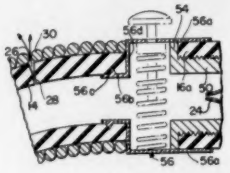
said needle having external threads adjacent the outer end of the guide, portions of said threads being adapted to be positioned to extend simultaneously into the guide and outwardly of the guide, and

a measuring guard threadedly engaged on said threads on said needle outwardly of said guide to limit inward movement of the needle in said guide and into the marrow of the bone, said threads on said needle being of substantial length to permit substantial longitudinal adjustment of the measuring guard on the needle to substantially vary the limit of said inward movement, said measuring guard limiting the inward movement by abutting the outer end of the guide.

4,142,518
SPHYGMOMANOMETER PRESSURE RELEASING MEANS

William L. Howell, 3615 Macomb St., NW., Washington, D.C. 20008

Filed Apr. 6, 1977, Ser. No. 785,218
Int. Cl.[2] A61B 5/02
U.S. Cl. 128—2.05 G 5 Claims

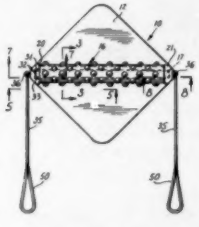


1. A sphygmomanometer including an inflatable-deflatable cuff, a pressure generating "squeeze" bulb, a tubing extending between said bulb and said cuff through the bore of which inflating air-pressure may be supplied to said cuff, means for effecting deflation of said cuff following inflation thereof as may be required in the taking of a patient's blood pressure, said means comprising a normally inactive, air-vent hold extending radically outwardly from the tubing bore through the tubing wall at a point along the length of said tubing proximal to said bulb, said air-vent hole being rendered active in response to limited bending pressure applied to the exterior surface of that portion of the tubing extending just beyond said hole in the direction of said cuff, and spring means operatively carried by said tubing length and extending axially therealong and to both sides of said hole for normally maintaining said tubing length portion in non-bent condition but permitting limited bending thereof as required to render said vent hole active.

4,142,519
MASSAGING APPARATUS

Robert K. Ferguson, Box 792, Babbitt, Nev. 89416

Filed Jul. 11, 1978, Ser. No. 923,686
Int. Cl.[2] A61H 15/00
U.S. Cl. 128—57 6 Claims

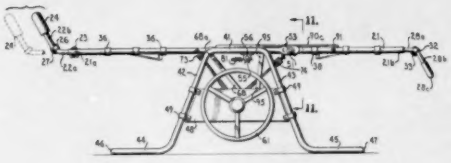


1. A massager for massaging body tissues comprising a resilient massaging roller rotatably and removably mounted on a base member, the periphery of said roller being studded with flanged protuberances, and said massager having means secured thereto for guiding and manipulating the roller during the massaging operation, said flanged protuberances comprising machine screw head means having screw-driver slots thereon, and wherein said head means are spaced above the surface of the roller, said roller being made of rubber or resilient plastic material and journalled in spaced upright means secured to said base member.

4,142,520
TILTABLE RECLINING AND SEATING DEVICE

Ted E. Herbold, 1909 E. 28th Ave., North Kansas City, Mo. 64116

Filed Jul. 25, 1977, Ser. No. 818,610
Int. Cl.[2] A61F 5/00
U.S. Cl. 128—74 8 Claims



1. A therapy device comprising, in combination:

a pair of parallel oriented A-frame members adapted to rest on a floor or ground surface with the lower ends of the legs of the A,

a pair of first bearing collars, one fixed to each underside of the tops of the A-frames,

a first cylindrical shaft rigidly received in said first bearing collars,

an elongate, rectangular, body-receiving frame having elongate side members and transverse end members,

the said body-receiving frame configured at the ends thereof so as to provide a downwardly angled head end and an upwardly angled foot end,

a pair of second bearing collars, one fixed to each underside of the elongate side members of the body-receiving frame intermediate the length thereof pivotally engaging the first cylindrical shaft inboard of the first bearing collars,

two opposed, substantially parallel plate members, one carried between each pair of A-frame legs and fixed thereto,

a second cylindrical shaft rotatably received between said two plate members and extending therethrough,

a turning wheel removably fixed to each end of said second shaft outside of the said plate members,

a pair of transverse beam members, each extending between and fixed to the said members of the body-receiving frame intermediate the ends thereof, one on each side of said first and second cylindrical shafts,

elongate, resilient cable means coupling the said latter transverse beam members and the second cylindrical shaft, whereby rotation of the latter in one direction angles the body-receiving frame from the horizontal with the head end downward and foot end upwards and rotation of the second cylindrical shaft in the other direction returns the body-receiving frame towards the horizontal position thereof,

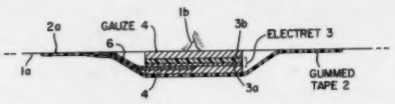
the downwardly angled head end of the body-receiving frame and the upwardly angled foot end of same each having a transverse beam member extending between and connecting the elongate side members at the ends of the straight portions thereof and immediately before the upwardly and downwardly angled head end and foot end, respectively, and

body carrying, transverse support members provided communicating between and carried by the elongate side members along the lengths thereof between said cushioned transverse beams adjacent the ends of said body-receiving frame.

4,142,521
ELECTROSTATIC SOFT TISSUE WOUND REPAIR ENHANCEMENT

John J. Konikoff, Short Hills, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Dec. 23, 1976, Ser. No. 754,060
Int. Cl.[2] A61N *1/10*
U.S. Cl. 128—82.1 19 Claims

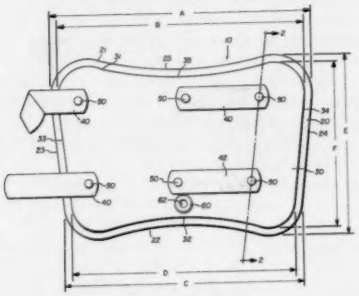


1. A method for promoting soft tissue wound healing comprising applying non-invasively and in close proximity to a soft tissue wound site of an organism an electret providing an electrostatic field to the wound site.

4,142,522
PEDIATRIC ARM RESTRAINT AND METHOD OF USING SAME

Edward J. Hill, Detroit, Mich., assignor to H & H Research, Inc., Bloomfield Township, Oakland County, Mich.

Continuation-in-part of Ser. No. 711,496, Aug. 4, 1976, Pat. No. 4,078,560. This application Sep. 19, 1977, Ser. No. 834,689
The portion of the term of this patent subsequent to Mar. 14, 1995, has been disclaimed.
Int. Cl.[2] A61F *13/00*
U.S. Cl. 128—133 11 Claims



1. A pediatric arm restraint for wrapping around a child's arm to maintain the elbow straight so that the child is unable to place its hand on restricted regions, such as intravenous feedings or medical dressings, comprising:

a quadrilateral body portion which is normally flat for shipping and deformable for wrapping completely around a child's arm to form an essentially tubular elbow restraint, with the body portion being adapted to extend from the child's axilla to below the elbow essentially to the wrist yet permitting freedom of movement of the arm at the shoulder and freedom of movement at the fingers and wrist, and the restraint including a first edge for placement in the child's axilla, a pair of laterally spaced edges converging from said first edge, and a second edge which is smaller than said first edge;

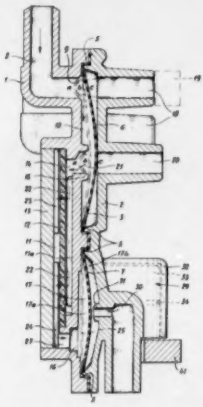
the body portion including (a) an inner pad of relatively thin foam material for placement against the infant's arm to provide a non-irritating cushion and (b) a sheet of flexible, deformable, yet relatively stiff plastic material for rigidifying the arm restraint, the foam pad and the plastic sheet being interconnected in overlying generally aligned manner; and

securing means carried by the plastic sheet for releasably maintaining the arm restraint in an essentially tubular wrapped position around the child's arm.

4,142,523
FLOW CONTROL DEVICE FOR THE INTRAVENOUS ADMINISTRATION OF LIQUIDS

Bernardus H. M. J. Stegeman, Zaandam, Netherlands, assignor to Koninklijke Emballage Industrie Van Leer B.V., Netherlands

Filed Mar. 25, 1977, Ser. No. 781,430
Int. Cl.[2] A61M *5/00*
U.S. Cl. 128—214 R 9 Claims



1. A flow control device for controlling the liquid flow rate during an intravenous administration comprising a housing defining a supply chamber having an inlet channel means, a filter chamber connected to the supply chamber by a passage means; an outlet chamber connected to the filter chamber; a first membrane in the supply chamber arranged to lie under tension covering the passage means between the supply chamber and the filter chamber means, the inlet channel opening into the supply chamber on the same side of the membrane as the passage means; a second membrane in the outlet chamber dividing the chamber into two separate parts; a by-pass channel means connecting said separate parts; control means for adjusting the through flow area of the by-pass channel means; an outlet channel means connected to the part of the outlet chamber downstream of the by-pass channel means, the second membrane being movable towards and away from the outlet channel means to vary the flow area thereof in accordance with the pressure differential between the two outlet chamber parts.

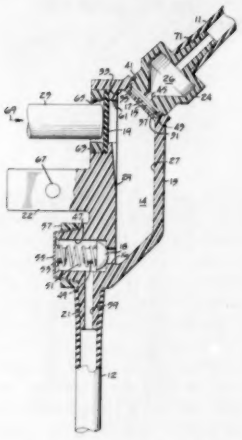
4,142,524
CASSETTE FOR INTRAVENOUS DELIVERY SYSTEM

Jal S. Jassawalla, San Francisco; Herbert Chen, Berkeley, and Ingvar Olaffson, Albany, all of Calif., assignors to Andros Incorporated, Berkeley, Calif.

Filed Jun. 2, 1977, Ser. No. 802,679
Int. Cl.[2] A61M *5/00*
U.S. Cl. 128—214 F 2 Claims

1. A cassette for use in an intravenous delivery system of the limited positive displacement type having a reciprocatory pump member, said cassette operating between an upstream portion and a downstream portion of the intravenous delivery system and comprising, a generally elongated cassette body having opposite walls of oval outline having semicircular end configurations, said body defining an elongated main chamber with opposite parallel surfaces of substantially the same outline but of different sizes and with a slanted wall joining said surfaces, said cassette body defining an inlet port to said main

chamber proximate one end thereof and passing through said slanted wall, one of said opposite walls defining the larger of said opposite parallel surfaces of said main chamber and having first and second openings therein spaced toward opposite ends thereof, respectively, each of said openings being of substantially smaller area than the area of said larger parallel surface, a membrane spanning said first opening adapted for engaging the reciprocatory pump member for varying the volume of said main chamber in response to movement of said reciprocating pump member, said second opening forming an outlet port



arranged proximate the other end of said main chamber from said inlet port, a tongue extending from said elongated wall of said cassette body, said tongue having detent means thereon for coupling said cassette to a pump assembly having a pump element engageable with said membrane, said cassette body having further wall means defining a prechamber arranged above and in communication with said inlet port and extending from said slanted wall, said prechamber having a volume selected to accumulate air from the upstream portion of the intravenous delivery system in an amount sufficient to maintain said main chamber substantially free of air.

4,142,525

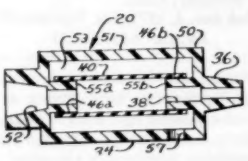
SYRINGE ASSEMBLY

William J. Binard; Anthony J. Clarico, both of Cary; Leonard R. Anglada, Arlington Heights, and Bhupendra C. Patel, Elgin, all of Ill., assignors to The Kendall Company, Boston, Mass.

Division of Ser. No. 776,147, Mar. 10, 1977, Pat. No. 4,074,714, which is a division of Ser. No. 702,164, Jul. 2, 1976, Pat. No. 4,030,497, which is a division of Ser. No. 627,982, Nov. 3, 1975, Pat. No. 4,000,741, which is a continuation-in-part of Ser. No. 509,757, Sep. 27, 1974, abandoned. This application Nov. 17, 1977, Ser. No. 852,379

Int. Cl.[2] A61M *5/00*

U.S. Cl. 128—218 R **6 Claims**



1. A syringe, comprising:

a barrel having a chamber for retaining fluid;

a body member extending from said barrel and defining a tip for attachment to a fluid receiving device, said body member having a shield defining a chamber of fixed volume; and

a flexible sleeve in said chamber having ends secured to the body member with the sleeve communicating between said tip and the chamber, said sleeve being inflatable at a predetermined pressure to relieve pressure generated by the syringe.

4,142,526

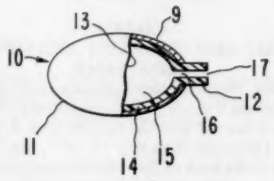
OSMOTIC RELEASING SYSTEM WITH MEANS FOR CHANGING RELEASE THEREFROM

Alejandro Zaffaroni, Atherton; Alan S. Michaels, San Francisco; Felix Theeuwes, Los Altos, all of Calif., assignors to Alza Corporation, Palo Alto, Calif.

Division of Ser. No. 536,006, Dec. 23, 1974, Pat. No. 4,036,227, and a continuation-in-part of Ser. No. 354,344, Apr. 25, 1973, abandoned. This application Mar. 9, 1977, Ser. No. 775,987

Int. Cl.[2] A61M *31/00, 37/00*

U.S. Cl. 128—260 **27 Claims**



1. An osmotic device for dispensing an active agent to an environment of use, said device comprising,

(a) a shaped wall formed of a semipermeable material that maintains its integrity during the dispensing period, is permeable to the passage of an external fluid present in the environment of use and substantially impermeable to the passage of agent, the wall surrounding and forming;

(b) a compartment containing an active agent;

(c) a layer formed of an erodible material on at least a part of the exterior surface of the wall;

(d) a passageway in the wall, said passageway communicating with the compartment and the exterior of the device for dispensing agent from the device; and

(e) wherein, when the device is in the environment of use, the layer erodes at a controlled rate to regulate the amount of fluid available to the wall for imbibition, with fluid imbibed through the wall into the compartment in a tendency towards osmotic equilibrium at a rate determined by the permeability of the wall and the osmotic pressure gradient across the wall, thereby continuously dissolving agent which is dispensed from the device through the passageway at a controlled rate over a prolonged period of time.

4,142,527

ENDOTRACHEAL TUBE HOLDER

Nelson C. Garcia, P.O. Box 3804, Quito, Ecuador

Filed Feb. 7, 1977, Ser. No. 766,558

Int. Cl.[2] A61M *25/02*

U.S. Cl. 128—348 **3 Claims**

1. An assembly of an endotracheal tube and an endotracheal tube holder for securing the endotracheal tube in a selected position in a patient's trachea comprising:

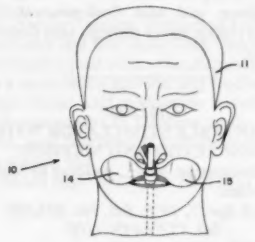
a support strip having an adhesive-backed material to secure the support strip to the patient's face, the support strip being configured to be positioned only in the naso-lip area of the patient's face between the lower portion of the nose and the upper lip and to spread from cheek to cheek;

a locking strip comprising a "Velcro" material portion;

a pad comprising a material which interlocks with "Velcro" material;

the support strip defining an integral interconnecting portion to which the locking strip and the pad are attached;

the endotracheal tube having a presealed ring at a selected



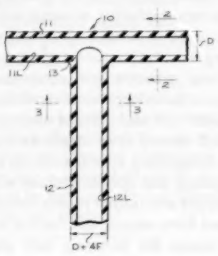
location comprising a material which interlocks with "Velcro" material, whereby the locking strip can be locked around the presealed ring and to the pad to lock the tube in the selected position and prevent rotation thereof, the presealed ring being marked to define different levels of intubation.

4,142,528

SURGICAL TUBULAR MEMBER

Joseph G. Whelan, Jr., 419 Blankenbaker La., Louisville, Ky. 40207, and James P. Moss, 250 E. Liberty St., Louisville, Ky. 40202

Filed Jan. 28, 1977, Ser. No. 763,617
Int. Cl.[2] A61M *27/00*
U.S. Cl. 128—350 R **3 Claims**



1. A hollow tubular member for insertion into the common bile duct of a patient to provide a conduit from inside the duct to outside the body wall of the patient and to promote the growth of a fistulous tract between the outside of the body wall and the inside of the duct, the hollow tubular member including;

(a) a stem and a crossbar on one end of the stem formed as one piece in a T-shape, the crossbar being flexible such that the crossbar can be flexed and inserted through a surgically formed opening in the duct wall with the stem extending through the opening in the duct and through a surgically formed opening in the body wall of the patient,

(b) said crossbar and stem each having only a single lumen extending therethrough with the lumen in the stem being in fluid communication with the lumen in the crossbar, and

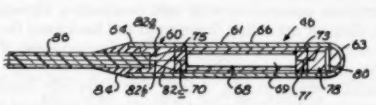
(c) the external diameter of the stem being greater than the external diameter of the crossbar from the end of said stem which extends through the opening surgically made through the body wall of the patient to the junction of the stem with that portion of the external surface of the crossbar most proximate the stem and disposed within the duct, the remainder of the junction between the stem and crossbar being disposed within the duct and comprising a contoured external surface on the stem extending around a portion of the external surface of the crossbar such that the opening in the duct is of a diameter equal to the external diameter of the stem and the contoured portion of the stem together with the crossbar disposed within the duct are of a diameter less than the external diameter of the stem outside the duct whereby the hollow tubular member provides a conduit for drainage of bile from inside the duct to a location outside the body wall of the patient and provides a conduit for passage of an instrument so that an object, such as a retained stone, can be nonsurgically withdrawn by the instrument to a location outside the body and the fistulous tract which grows on the stem between the body wall and the duct is of an internal diameter equal to the external diameter of that portion of the stem outside the duct so that the portion of the stem within the duct and the crossbar can be readily removed through the fistulous tract and the fistulous tract and opening into the duct are sufficiently large to permit the passage of a surgical instrument into the duct after removal of the tubular member.

4,142,529

PROCESS AND DEVICE FOR THE THERAPEUTIC TREATMENT OF HEMORRHOIDS

James S. Latenser; Roger Q. Estes, and Gerald I. Connor, all of Spokane, Wash., assignors to Bio-Tronics, Inc., Spokane, Wash.

Filed Jun. 20, 1977, Ser. No. 807,827
Int. Cl.[2] A61F *7/12*
U.S. Cl. 128—401 **9 Claims**



1. A proctologic device for the therapeutic treatment of external and/or internal hemorrhoids projecting from the wall of a patient's anal canal which extends from the anus to the rectum and is surrounded by sphincter muscles; comprising:

an anal canal appliance for insertion into the anal canal through the anus;

said appliance having an elongated cylindrical body with an external heat transfer surface extending from a front end to a rear end for intimately contacting the anal canal wall and the projecting hemorrhoids;

said external heat transfer surface having a diameter sufficient to expand the anal canal and effectively transfer heat from the heat transfer surface to the anal canal wall and the hemorrhoids without painfully stretching the sphincter muscles;

said appliance having an electrical resistor heating element mounted internally within the cylindrical body for converting electrical energy to thermal energy;

said appliance having an efficient solid heat transfer medium within the body encapsulating the electrical resistor heating element for transferring thermal energy from the electrical resistor heating element to the external heat transfer surface;

a source of electrical energy;

a cable means extending between the source and the appliance for operatively connecting the source to the electrical resistor heating element;

a temperature transducer in the body for sensing the temperature of the external heat transfer surface and for producing an electrical temperature signal corresponding to the temperature of the external heat transfer surface;

control means operatively connected to the electrical energy source and responsive to the electrical temperature signal

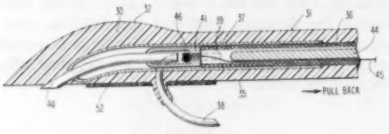
for automatically regulating the amount of electrical energy applied to the electrical resistor heating element to heat the external heat transfer surface and to maintain the external heat transfer surface at a preset temperature between body temperature and 45° C. to thereby relax the sphincter muscles and to facilitate the opening of vascular channels of the hemorrhoids to facilitate shrinkage of the hemorrhoids.

4,142,530

EPICARDIAL LEAD

Frederik H. M. Wittkampf, Brumen, Netherlands, assignor to Vitatron Medical B. V., Dieren, Netherlands

Filed Mar. 6, 1978, Ser. No. 883,455
Int. Cl.[2] A61N *1/04*
U.S. Cl. 128—418 **17 Claims**



1. An epicardial lead adapted for attachment to a heart surface, comprising:

a. an encased conductor portion extending substantially the length of said lead, having a conductive element for transmitting electrical signals between a proximal end and a distal end;

b. an insulated head portion integrally connected to the distal end of said conductor portion, having a bottom surface and at least one conductive contact tip element in electrical connection with said conductive element, said tip element extending downward and backward from said bottom surface, having a longitudinal component of extension in the proximal direction; and

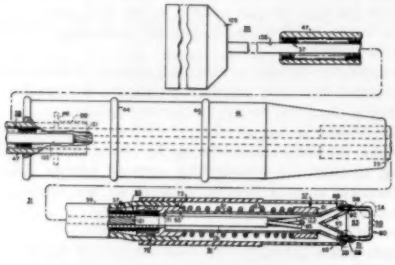
c. anchor means having at least one moveable anchor element extending forward and downward from said bottom surface, for engaging said heart surface.

4,142,531

CATHETER

George J. Magovern, Pittsburgh; Frederick J. Shipko, Spring Church, and George W. Roland, Indiana, all of Pa., assignors to Coratomic, Inc., Indiana, Pa.

Continuation-in-part of Ser. No. 756,630, Jan. 4, 1977, abandoned. This application Dec. 2, 1977, Ser. No. 856,681
Int. Cl.[2] A61N *1/04*
U.S. Cl. 128—418 **10 Claims**



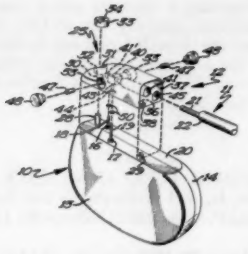
1. A catheter, for use in supplying current to an organ of a body, said catheter including an electrical conductor, a clamp, connected in electrically conducting relationship with said conductor near the end of said conductor that is to be nearest said organ, said clamp having resilient jaws to be clamped to said ogan in electrically conducting relationship therewith, means, connected to said clamp for opening and closing said jaws in reliance upon their resilience, means composed of resiliently yieldable material interposed between said clamp and said conductor to prevent the penetration to said conductor of body fluids from the region where said clamp is clamped to said organ, said clamp passing through said fluid-penetration-preventing means, and means for sealing the junction between said clamp and said fluid-penetration-preventing means where said clamp passes through said fluid-penetration-preventing means.

4,142,532

BODY IMPLANTABLE STIMULATOR WITH NOVEL CONNECTOR AND METHOD

Lyle A. Ware, Bloomington, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Apr. 7, 1978, Ser. No. 894,358
Int. Cl.[2] A61N *1/00*
U.S. Cl. 128—419 P **24 Claims**



1. In a body implantable stimulator of the type having signal generator means, including output means extending therefrom, having lead means, including contact means carried thereby, and having connector means electrically and mechanically interconnecting said lead means and signal generating means, the improvement wherein said connector means comprises preformed means including terminal means for interconnecting said output means and said contact means, said terminal means having first and second bore means and said preformed connector means comprising aperture means associated with each of said bore means, said aperture means accepting and guiding said contact means and output means into different ones of said first and second bore means, and further comprising mechanical fastener means for securing said preformed connector means to said signal generator means.

4,142,533

MONITORING SYSTEM FOR CARDIAC PACERS

Robert R. Brownlee, State College; G. Frank O. Tyers, Hershey, and Paul H. Neff, Bellefonte, all of Pa., assignors to Research Corporation, New York, N.Y.

Filed Oct. 28, 1976, Ser. No. 736,491
Int. Cl.[2] A61N *1/36*
U.S. Cl. 128—419 PT **19 Claims**

1. Apparatus for remotely monitoring and controlling the functioning of a cardiac pacer implanted in a patient, said apparatus comprising:

telemetering means in said implanted pacer for telemetering a modulated electrical signal simultaneously indicative of multiple pacer parameters related to the functioning thereof and comprising:

first inductance means for electrically transmitting said modulated signal out of said pacer patient;

control circuitry means for controlling the output of said pacer to the heart of the patient in response to R-waves received from said heart and comprising:

time variable circuitry means for interrupting said R-

waves to, and thus producing a test mode in, said control circuitry means;

means for producing signals indicative of the functioning of said control circuitry means when said control circuitry means is in the test mode; and

junction means for receiving said functioning indicative signals;

monitoring circuitry means, connected between said junction means and said first inductance means, for producing said modulated signal with a simultaneous multiparameter indicative modulation thereon and feeding it to said first inductance means, said modulation including a parameter indicative component in response to the receipt of, and related to, said functioning indicative signals from said junction means; and

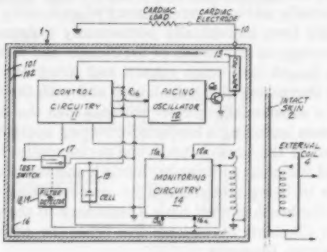
switching means responsive to an externally produced command signal for actuating said time variable circuitry means whereby said signals indicative of the functioning of said control circuitry means are communicated to said monitoring circuitry means and produce a related parameter indicative modulation on said modulated signal which is fed to said first inductance means for transmission thereby as said telemetered signal; and

means external to said patient for monitoring said telemetered signal comprising:

second inductance means for receiving said telemetered signal from said first inductance means;

means operatively connected to said second inductance means for analyzing the modulation on said telemetered signal received by said second inductance means; and

means for producing a command signal to actuate said switching means to put said control circuitry means in said pacer in the test mode.



4,142,534

REDUCTION OF TOXIC SUBSTANCES IN TOBACCO SMOKE

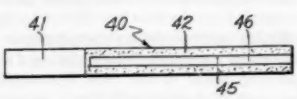
Victor Brantl, Frauenplatz 10, 8 Muenchen 2, Fed. Rep. of Germany

Filed May 14, 1976, Ser. No. 686,402

Claims priority, application Fed. Rep. of Germany, Sep. 4, 1975, 2539418; Apr. 2, 1976, 2614367

Int. Cl.[2] A24D *1/00*

U.S. Cl. 131—8 R **27 Claims**



1. A tobacco-filled smoking article having a mouthpiece end and an end to be lighted and being adapted to produce a low proportion of carbon monoxide in the gaseous products of combustion, comprising a tobacco filling and means for radially confining said tobacco, wherein within the volume of tobacco and spaced from said tobacco-confining means, there is at least one tobaccoless region separated from the tobacco by a substantially air-impermeable partition which is combustible and which remains form-stable under the effect of heat during burning of the tobacco in a combustion zone in order to prevent external air from passing through the partition into the inner region of the tobacco in the combustion zone and behind the combustion zone, said tobaccoless region being also substantially air-impermeable at its end adjacent the mouthpiece end of said smoking article, and the cross sectional area of said tobaccoless region being less than about 60% of the total cross-sectional area of said article.

4,142,535

SMOKING PRODUCT

Paul R. Perkins, Portishead, and Christopher R. Bale, Bristol, both of England, assignors to Imperial Group Limited, London, England

Continuation of Ser. No. 682,954, May 4, 1976, abandoned. This application Nov. 7, 1977, Ser. No. 849,429

Int. Cl.[2] A24B *3/14*

U.S. Cl. 131—17 AC **7 Claims**

1. A smoking product in sheet form comprising 5–60% by weight tobacco and 40 to 95% by weight non-tobacco additives, including as a film-forming or binding agent a pectin having a degree of methylation between 30% and 75% and an inherent viscosity between 2 and 6.5 deciliters per gram, whereby the sheet has a substantially greater relative filling power as a measure of firmness when in a cigarette, than the relative filling power of cured Virginia tobacco, said relative filling power, RFP, being defined as:

$$RFP = \frac{\text{mean density of control cigarette}}{\text{mean density of experiment of cigarette}} \text{ at the}$$

4,142,536

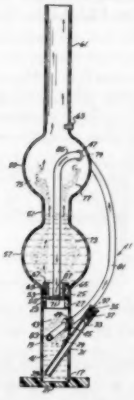
WATER PIPE

Nicholas DeCarlo, P.O. Box 256, Grosse Ile, Mich. 48138

Filed Aug. 31, 1977, Ser. No. 829,238

Int. Cl.[2] A24F *1/30*

U.S. Cl. 131—173 **11 Claims**



1. A water pipe comprising a base having a flat bottom support surface and a circular aperture in its top;

an upright support tube of uniform diameter having a central longitudinal axis at one end snugly projected into said aperture and secured to said base and having an upper open end;

an open ended assembly sleeve snugly and frictionally projected for a part of its length down into said tube open end, with a portion of said sleeve extending above said support tube;

a transverse partition means snugly disposed across and sealed within said sleeve;

an elongated upright hollow body axially aligned with said support tube having a cylindrical base at one end thereof of the same diameter as said support tube, snugly and frictionally projected over said assembly sleeve and into engagement with said support tube as a smooth continuation thereof;

an elongated cylindrical mouth piece at the upper end of said body and open at one end;

an elongated bowl support tube with a portion thereof projected and sealed through the wall of said support tube and extending at an acute angle to its longitudinal axis;

a bowl adapted to receive a smoking mixture mounted on said latter tube on the outer end thereof;

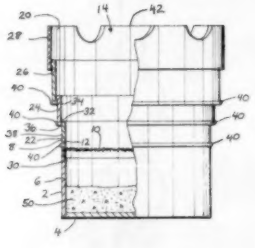
said support tube for a portion of its height being filled with a liquid defining with said support tube above said liquid a first smoke chamber;

said body for a portion of its height above said partition means being filled with a liquid defining with said body above said liquid a second smoke chamber extending into said mouth piece;

and a flexible conduit means upon the exterior of said support tube and body at one end projected through the wall of said support tube and into said first smoke chamber;

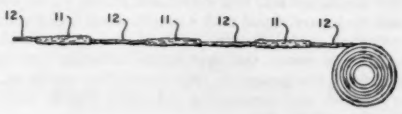
said conduit means being reverse-turned intermediate its ends, projected through the wall of said body with its other end extending through said second smoke chamber and down into the liquid in said body above said partition means.

4,142,537
ASH TRAY
John E. Fenelon, 1441 S. 61st Ave., Cicero, Ill. 60650
Filed Sep. 28, 1977, Ser. No. 837,582
Int. Cl.[2] A24F *19/00*
U.S. Cl. 131—240 GG **3 Claims**



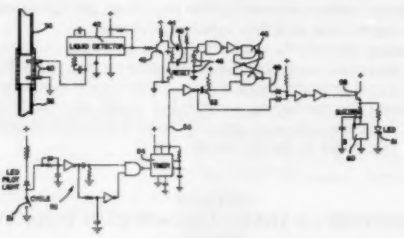
1. An ash tray comprising a first portion having a bottom wall and a continuous wall upstanding therefrom, said continuous wall having a lip on its free end, and a second portion, said second portion having a plurality of concentric members telescopically connected, a first of said members having a free edge thereon shaped complementarily to said lip and engageable therewith to connect said first portion to said second portion, and a screen disposed in said second portion in a plane extending parallel to said bottom wall, said screen being about its entire periphery in engagement with interior portions of said second portion, said screen thereby forming a barrier between said bottom wall and an opening defined by said second portion.

4,142,538
DIFFERENT STIFFNESS CONTINUOUS LENGTH TEETH CLEANER
Thomas F. Thornton, 221 Mill Rd., New Canaan, Conn. 06840
Filed Jan. 17, 1977, Ser. No. 760,194
Int. Cl.[2] A61C *15/00*
U.S. Cl. 132—89 **6 Claims**



1. An interproximal tooth cleaner comprising a length of continuously textured yarn formed of a plurality of filaments that have been individually permanently deformed and crinkled throughout the length of the cleaner and means subdividing the length into brush extents and string extents with the extents alternating along the length and with the brush extents having a substantially greater stiffness than the string extents, said means including a hardened covering applied only on the filaments of the brush extents, the permanently deformed and crinkled filaments forming both brush and string extents being capable of being straightened by an elongating force and in which the brush extents have a resistance to the straightening of their filaments by at least five times the resistance of the string extent filaments.

4,142,539
SANITIZER ALERT SYSTEM
Kelvin Shih, and Makram N. Bishai, both of Troy, Ohio, assignors to Hobart Corporation, Troy, Ohio
Filed Sep. 21, 1977, Ser. No. 835,198
Int. Cl.[2] B08B *3/00, 13/00*
U.S. Cl. 134—113 **8 Claims**



1. A sanitizer alert system in combination with a warewasher such as a dishwashing machine, having wash and rinse systems for cleaning food ware items placed therein, a source of chemical sanitizing agent, a conduit having an outlet end connecting the source of chemical sanitizing agent to an outlet end in the warewasher rinse system, means providing delivery periods for the chemical sanitizing agent, and means actuated during each of the delivery periods for moving the sanitizing agent through the conduit from the inlet end thereof to the outlet end to deliver sanitizing agent to the warewasher rinse system, the sanitizer alert system monitoring and verifying delivery of the chemical sanitizing agent to the rinse system of the warewasher during each of successive delivery periods, and comprising:

(a) a delivery indicator having at least two switchable states including a first state for indicating proper delivery of the sanitizing agent and a second state for indicating improper delivery,

(b) means for activating said delivery indicator during each of the delivery periods,

(c) detecting means for detecting the absence and the pres-

ence of the sanitizing agent at a predetermined location in the conduit,

(d) means connected to said detecting means for switching said delivery indicator to said second state if the presence of sanitizing agent is detected at said predetermined conduit location at the beginning of a delivery period, and

(e) means connected to said detecting means for switching said delivery indicator to said second state at the end of a predetermined time period upon detecting the continuing absence of sanitizing agent at said predetermined conduit location during said predetermined time period.

4,142,540

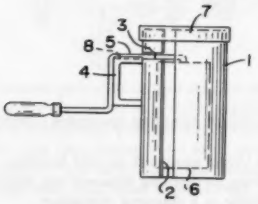
WASH SHIELD FOR PAINT ROLLER

Lucien Vegiard, 5921 46th Ave. North, Kenneth City, Fla. 33709

Filed Oct. 17, 1977, Ser. No. 842,601

Int. Cl.[2] B08B *3/02*

U.S. Cl. 134—138 **1 Claim**



1. A shield for the washing of a paint roller comprising (a) a sheet material shaped in substantially cylindrical form having a first slot and a second slot therein, said first slot running substantially parallel to the linear axis of said cylindrical form and said cylindrical form having a length extending beyond the length of the paint roller to be washed, said first slot having a width sufficient to accommodate the passage of the narrowest portion of the roller arm and to permit the passage of a wash stream therethrough whereby said wash stream impinges tangentially on said roller and rotates and washes paint from said roller, said second slot being positioned near one end of said cylindrical form and running perpendicularly from said first slot and only a short distance around the curved surface of said cylindrical form, said second slot being adapted to accomodate the handle arm of said paint roller during washing, (b) a handle attached to said cylindrically formed sheet material and positioned adjacent to said second slot, said handle being adapted to support said shield and to have the paint roller handle pressed into contact therewith and thereby to hold and support said roller during the washing operation; and (c) and end plate closing said cylindrical form of said shield at the end adjacent to said second slot, with the opposite end being open to allow the flow of wash water from said shield.

4,142,541

DEVICE FOR CLEANING SURFACES OF FOODS

Eduard Bossert, Lindenstr. 22, Gundelfingen, and Marlies Aumann, Freiherr-vomstein Str. 6, Braubach, both of Fed. Rep. of Germany

Filed Sep. 29, 1976, Ser. No. 727,656

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1975, 2543550

Int. Cl.[2] B08B *3/06*

U.S. Cl. 134—143 **16 Claims**

1. Apparatus for cleaning the surfaces of foods comprising:

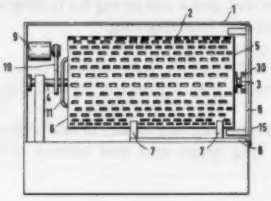
(a) a water tight housing including a movable wall for permitting entry into said housing;

(b) a drum dimensioned relative to said movable wall for entry into said housing, said drum having perforations therein;

(c) means for rotatably mounting said drum in said housing;

(d) means for rotating said drum in said housing, and

(e) a basket within the drum, said basket being sector-shaped in cross section and comprising a pair of radially extending walls, means pivotally supporting one said radially extending wall for movement towards or away from the



other said radially extending wall, and means for locking said one wall in any one of a number of selected positions, said basket being perforated, whereby to immobilize material in said basket independently of the quantity of such material therein when said drum is rotated and fluid moves in contact with said articles.

4,142,542

PIPELINE BUFFER HYDROCARBON FROM CATALYTIC CRACKER EFFLUENT

Norris W. Mitchell, Sweeny, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 19, 1977, Ser. No. 862,064

Int. Cl.[2] E03B *1/00;* **F17D** *1/00*

U.S. Cl. 137—1 **3 Claims**

1. In the shipping or transportation by pipeline of a gasoline and a distillate having a flash point of at least about 125° F. the use as a buffer therebetween in the pipeline of a liquid hydrocarbon obtained by fractionating in a fractionation zone a stream of cracked hydrocarbon vapors, obtained upon cracking a hydrocarbon oil in the presence of a catalyst to yield said vapors to include gases, a cracked gasoline fraction and a light cycle oil which can be fractionated from said vapors in said zone, fractionating from said vapor in said zone a fraction containing said gasoline fraction as an overhead from said zone, withdrawing from said zone a second fraction higher boiling than said gasoline fraction but lower boiling than said light cycle oil, passing said second fraction to a stripping zone, in said stripping zone stripping said second fraction under low pressure and high temperature and with the aid of steam to remove therefrom constituents boiling in the gasoline fraction boiling range, and when sulfur or sulfur compounds are present in undesirable amounts contacting said now-stripped fraction with a sulfur removal treating agent, recovering said thus treated second fraction and injecting the same between a volume of gasoline and a volume of distillate being shipped in said pipeline.

4,142,543

VALVE STEM AND DISC COMBINATION AND METHOD OF ASSEMBLING SAME

Richard J. Krause, Addison, and Joseph Zaletel, Elmhurst, both of Ill., assignors to Henry Valve Company, Melrose Park, Ill.

Filed Feb. 25, 1977, Ser. No. 772,231

Int. Cl. F16k *51/00*

U.S. Cl. 137—15 **4 Claims**

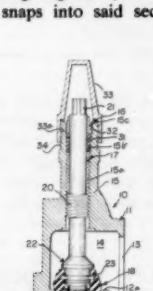
1. A method of loosely permanently mounting a valve stem on a valve disc in a valve assembly of the type wherein said assembly includes a valve housing having a threaded valve stem guide and a valve seat both axially aligned thereon, said valve stem including a threaded portion mediate the ends thereof, a first annular indent groove positioned around the circumference thereof, and a truncated conical surface at the distal end of said stem, a valve disc being substantially symmetrical and including a hollow cylindrical recess having a second

annular indent groove positioned around the circumference thereof, and a portion of said disc defining said cylindrical recess and said second annular indent groove thereon being a single-piece structure, an expandable retaining ring including flat opposed top and bottom surfaces thereon for mounting in said annular grooves, and a coil spring for biasing said disc and said stem against said retaining ring,

said method comprising the steps of:

constricting said retaining ring until an outer diameter of same is smaller than a diameter of said disc cylindrical recess;

inserting said retaining ring axially in said cylindrical recess until said ring snaps into said second annular indent groove;



positioning said spring on the bottom of said valve disc cylindrical recess;

threading said valve stem in said valve stem guide;

positioning said valve disc on said valve seat in said housing; then

turning said valve stem in said housing to move said one stem end into said valve disc cylindrical recess which expands said retaining ring in said disc annular groove with said conical distal end of said valve stem, collapses said coil spring in said cylindrical recess, and aligns said stem annular groove with said disc annular groove, whereby said retaining ring snaps into said stem annular groove mounting said disc in biased arrangement with said stem.

4,142,544

SAFETY ELEMENT FOR CLOSING A LINE FROM A PRESSURE VESSEL

Hermann Straub, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Apr. 5, 1977, Ser. No. 784,841

Claims priority, application Switzerland, Apr. 9, 1976, 4516/76

Int. Cl.[2] F16K *13/04, 17/40*

U.S. Cl. 137—67 **12 Claims**

10. A tubular safety element for closing a line connected to a pressurized vessel, said element defining a flow path therethrough and being peripherally folded to form a star-shaped cross-section at one end, a regular polygonal cross-section at an opposite end and a plurality of folds forming pyramidal pockets on the exterior thereof, said folded element being collapsible under a predetermined differential pressure between said pockets and the interior of said element.

4,142,545

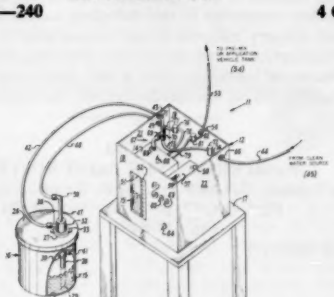
LIQUID PESTICIDE METERING, TRANSFERRING AND RINSING APPARATUS

James M. Billigmeier, 19021 E. Main St., Linden, Calif. 95236

Filed Oct. 31, 1977, Ser. No. 847,166

Int. Cl.[2] B05C *7/00*

U.S. Cl. 137—240 **4 Claims**



1. A liquid pesticide handling apparatus comprising:

a. a housing;

b. a metering vessel mounted on said housing;

c. a probe having an opening adjacent one end immersible in liquid pesticide in a shipping container;

d. a first hose connecting the other end of said probe to said vessel;

e. a metering pump interposed in said first hose capable of withdrawing the liquid from the shipping container and discharging the liquid into said vessel;

f. means for measuring the quantity of the liquid in said vessel;

g. check valve means for venting fluid from said vessel into the shipping container to replace the liquid withdrawn therefrom;

h. means for transferring the measured liquid from said vessel to a mixing tank;

i. means for rinsing the shipping container with a cleaning fluid, said rinsing means comprising hollow plug means sealingly engageable with the walls of an opening in the shipping container, said plug means including an upper end portion located outside the container and a lower end portion located inside the container, said lower end portion having a plurality of orifices forming a nozzle for the emission of high velocity cleaning fluid against the interior surfaces of the container; and,

j. a tube capable of carrying cleaning fluid from a source to an opening in said upper end portion of said plug, said opening communicating with the hollow interior of said plug means and with said nozzle orifices.

4,142,546

VALVE ARRANGEMENT FOR A PRESSURIZABLE VESSEL

Harmut Sandau, Moglingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 12, 1976, Ser. No. 741,459

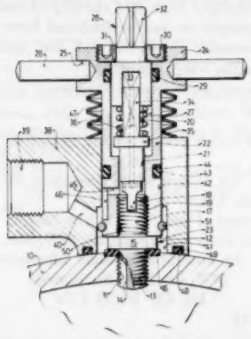
Claims priority, application Fed. Rep. of Germany, Nov. 14, 1975, 2551124

Int. Cl.[2] F16l *55/10*

U.S. Cl. 137—321 **13 Claims**

1. A valve arrangement for a pressurizable vessel, comprising a valve member mountable on a vessel for movement relative thereto, said valve member having passage means which extends in part along said valve member and which is movable together with the latter, said valve member having an exterior portion; and a valve-actuating assembly removably

mountable on the vessel, including a fitting having a passage and surrounding said valve member with clearance at the exterior of the vessel, further including a housing in said passage of said fitting and provided with an interior passageway in which said exterior portion of said valve member is movably



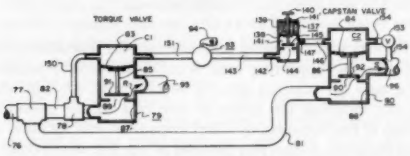
received, and means provided within said interior passageway of said housing for displacing said valve member between an open position in which said passage means communicates the vessel interior with the clearance so as to permit fluid flow between the interior and exterior of the vessel, and a closed position in which said fluid flow is prevented.

4,142,547

IRRIGATION SYSTEM AND IMPROVEMENT STRUCTURE THEREIN

Burr Courtright, Rte. #1, Box 1685, La Grande, Oreg. 97850

Filed Nov. 20, 1976, Ser. No. 738,045
Int. Cl.² B05B *3/18*
U.S. Cl. 137—344 **1 Claim**



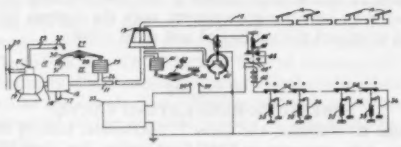
1. An agricultural irrigation system including, in combination, an elongate irrigation line provided with spaced, supporting, keyed wheels, first means for translating said irrigation line in a direction transverse to said line, second means coupled to said line for applying mechanical torque to said line, and third means responsive to irrigation line deflection for automatically progressively adjusting at least one of said first and second means throughout operation-range thereof to vary the ratio of the speed of revolvement of said irrigation line proximate said first means to the speed of translation of said irrigation line proximate said second means, whereby to tend to correct said deflection, wherein said first and second means each comprises hydraulic jacks; said third means including: first valve means, having a control, for proportioning liquid-flow to said hydraulic jacks; a fluid inlet coupled to said first valve means; said irrigation-line sensing means attached to said control for operationally moving said control, whereby to vary progressively such liquid-flow proportioning, and wherein said third means includes a pair of branch fluid lines coupled in parallel to said fiuid inlet, second and third valve means respectively coupled between said fluid inlet and said hydraulic jacks, and hydraulic circuit means hydraulically coupled to said fluid inlet and said second and third valve means and including said first valve means for variably proportioning fluid flow through said second and third valve means.

4,142,548

CONTROL FOR ROTATING ARM IRRIGATION SYSTEM

Allen R. Orcutt, Rush, Colo. 80833

Filed May 24, 1977, Ser. No. 800,056
Int. Cl.² B05B *3/00*
U.S. Cl. 137—344 **7 Claims**



1. A control for a crop irrigating system of the type having an arm including a water delivery conduit mounted on individual motor driven wheel assemblies and rotated about a central pivot structure and means including a power driven water pressurizing means remote from said structure and a pipe for supplying water under pressure to said water delivery conduit and for discharging irrigation water therefrom from said conduit, said control comprising;

means responsive to a predetermined low pressure of the water in the supply pipe for stopping the water pressurizing means, and

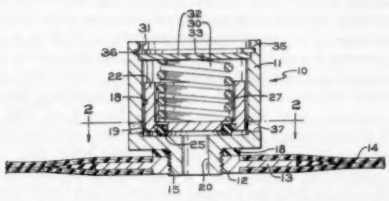
means near said central pivot structure and dependent upon a malfunction of the rotating arm for releasing the pressure on the water in said supply pipe sufficiently for actuating said low pressure responsive means to stop the supply of water.

4,142,549

RELIEF VALVE

Steven R. Autry, Massillon, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Sep. 19, 1977, Ser. No. 834,084
Int. Cl.² F16K *17/20*
U.S. Cl. 137—469 **1 Claim**



1. A high pressure relief valve comprising a cylindrical housing with a reduced cylindrical end portion, said end portion being externally threaded, an annular flange threadedly connected to said end portion for attachment to an inflatable raft and communicating with a chamber therein, a stepped bore extending through said housing, said bore having a first upper bore portion and a second lower bore portion, said second bore portion being of smaller diameter than said first bore portion and located in said cylindrical end portion, an annular shoulder formed between said first and second bore portions defining an annular valve seat, a piston slidably received by said first bore portion, said piston having an outer wall length that is greater than one-half of the depth of first bore portion, said piston is cup-shaped, the lowermost portion of said piston having a circumferentially extending O-ring for engaging said valve seat, said O-ring exposes a portion of said annular valve seat to pressurized medium from said second bore portion, spring means extending into said cup-shaped piston and is guided by and seated therein, said spring means biasing said piston into engagement with said valve seat, said cylindrical housing having a plurality of circumferentially

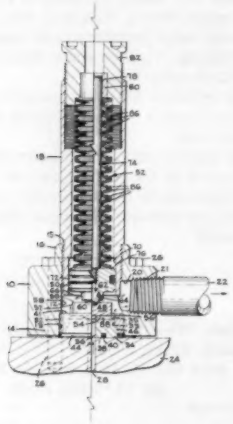
spaced and evenly spaced passageways communicating the exterior of said cylindrical housing with the interior of said first bore portion, said passageways located closely adjacent to said valve seat, an annular washer located in said first bore for retaining said piston in said first bore, said annular washer having a central bore for venting gases to atmosphere along with said passageways defining exhaust means, and wherein the area of said exhaust means is less that the area of said second bore which communicates with the bottom of said piston to initiate the venting of said relief valve.

4,142,550

PRESSURE REGULATING VALVE

Michael R. Williams, and Dean T. McDonald, both of Jonesboro, Ark., assignors to FMC Corporation, San Jose, Calif.

Filed Jun. 13, 1977, Ser. No. 805,756
Int. Cl.[2] F16K *15/00*
U.S. Cl. 137—538 **2 Claims**



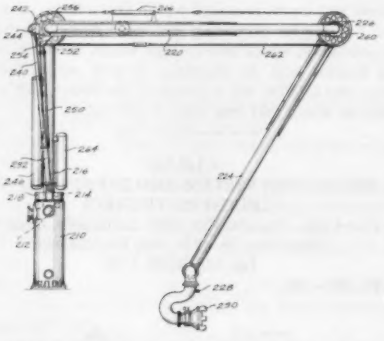
1. An improved relief valve for bypassing flow from a high pressure flow system so as to maintain the pressure within the flow system at a preselected magnitude including a valve casing having a valve chamber formed therein and an outlet bore extending from said valve chamber, valve seat means removably mounted to said casing and extending into said valve chamber, said valve seat means having an inlet bore formed therethrough and a relatively wide, annular surface contiguous with and surrounding said inlet bore, plug means within said valve chamber having an annular surface portion adapted to mate with the annular surface of said valve seat, and means for biasing said plug means towards the seat means with a preselected spring force so as to form an annular throttling passageway between the annular mating surfaces of said seat means and said plug means, wherein the improvement comprises: said valve seat means including an annular outer element which is removably mounted adjacent said valve casing and a cylindrical inner element removably mounted within said outer element, said inner element having said flat annular surface with the inlet bore extending therethrough perpendicularly from the center of said flat annular surface, the outer element having a cylindrical bore formed therein and being mounted relative to said inner element such that said cylindrical bore projects perpendicularly with respect to the annular surface of the inner element into the valve chamber from adjacent the periphery of said annular surface of the inner element, said mating annular surface portion of said plug means having an outer diameter which is substantially greater than the diameter of the inlet bore and which is less than the diameter of said flat annular surface of said inner element thereby forming a broad, radially extending, annular throttling passageway between said flat surfaces of said inner element and said plug means when bypass flow is flowing through said valve chamber, and said cylindrical bore of the outer element of said seat means projecting outwardly from said annular surface of said inner element by a distance which is greater than the thickness of said annular throttling passageway to thereby provide an axially extending, annular passageway between the outer element and said plug means whereby the bypass flow discharged from said radially extending throttling passageway impinges on said cylindrical bore of said outer element and thereafter flows through said axially extending passageway into the valve chamber.

4,142,551

HYDRAULICALLY BALANCED MARINE LOADING ARM

Carl A. Wilms, La Habra, Calif., assignor to Ameron, Inc., Monterey Park, Calif.

Continuation-in-part of Ser. No. 629,876, Nov. 7, 1975, Pat. No. 4,050,585. This application Aug. 25, 1977, Ser. No. 827,662
The portion of the term of this patent subsequent to Sep. 27, 1994, has been disclaimed.
Int. Cl.[2] B67D *5/04*
U.S. Cl. 137—615 **5 Claims**



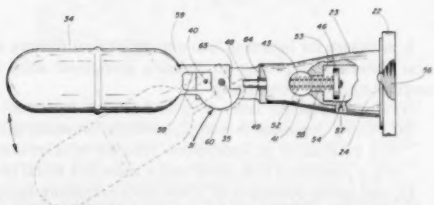
1. An articulated loading arm structure for transferring fluid, comprising: a supporting base, a column rotatably supported on the base for rotation about a vertical axis, a boom, means hingedly securing the boom at one end to the column for rotation of the boom about a first horizontal axis, an outer arm, means hingedly connecting one end of the arm to the outer end of the boom for rotation about a second horizontal axis parallel to the first axis of rotation of the boom, first means connected between the column and the boom means exerting a couple tending to rotate the boom about the first horizontal axis in the opposite direction from the couple produced by the weight of the boom and arm, said first means including at least one hydraulic cylinder having one end pivotally connected to the column and the other pivotally connected to the boom at a point offset from the first horizontal axis, and means including a volume of compressed gas for pressurizing hydraulic fluid in the cylinder, the volume of gas being large compared to the displacement volume of the hydraulic cylinder, second means connected between the column and the arm exerting a couple tending to rotate the arm about the second horizontal axis in the opposite direction from the couple produced by the weight of the arm, said second means including a lever arm rotatable about said first horizontal axis, and linkage means coupling the lever arm to the outer arm, the linkage means maintaining the lever arm and outer arm in fixed angular relationship relative to each other as they rotate about said first and second horizontal axes, the second means further including at least one hydraulic cylinder having one end pivotally connected to the column and the other end connected to the lever arm; and means including a volume of compressed gas for pressurizing hydraulic fluid in the hydraulic cylinder, the volume of gas being large compared to the displacement volume of the hy-

draulic cylinder, and means for adjusting the pressure of the gas for pressurizing the hydraulic fluid respectively in the first and second hydraulic cylinders, the means for pressurizing hydraulic fluid in the respective cylinders including a pair of accumulator tanks mounted directly on the column hydraulically connected respectively to the two cylinders, each accumulator being pressured by a gas from said volumes of compressed gas.

4,142,552
MAXIMUM LIQUID LEVEL CONTROL VALVE

Harley D. Brown, P.O. Box 844, Bedford, Ind. 47421, and Harley Brown, Bedford, Ind., assignors to Harley D. Brown, Bedford, Ind.

Filed Mar. 17, 1977, Ser. No. 778,371
Int. Cl.[2] F16K *33/18, 33/00*
U.S. Cl. 137—446 **10 Claims**



1. A valve for limiting the flow of liquid into a tank which comprises:

a valve body including a valve seat and a passage for liquid to flow therethrough, said valve body being mountable in a substantially horizontal position to the side wall of a tank;

a float pivotally attached to said valve body;

a normally open closure element positioned within said valve body and movable toward said valve seat to a closed position against said seat and away from said valve seat to an open position, said closure element being movable to said closed position under incoming liquid pressure thereby closing said passage;

a spring disposed between said valve body and said closure element, said spring being operable to return said closure element to said open position from said closed position once said incoming liquid pressure ceases to be present thereby opening said passage; and

a single cam member movable by said float to a suitable orientation relative to said closure element and locking said closure element against any movement toward said closed position when said float is below a maximum fluid level.

4,142,553
ELECTROTHERMALLY OPERATED VALVE

Naoji Sakakibara, Chiryu; Nobuyuki Hashimoto, Toyota, and Norio Shibata, Susono, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha and Toyota Jidosha Kogyo Kabushiki Kaisha, both of, Japan

Filed May 24, 1977, Ser. No. 800,023
Claims priority, application Japan, May 26, 1976, 51-67216[U]
Int. Cl.[2] F16K *31/02, 31/04;* **F03G** *7/06*
U.S. Cl. 137—625.44 **2 Claims**

1. An electrothermally-operated valve comprising:

a. a housing provided with first, second and third ports and with a hermetic chamber in communication with said ports;

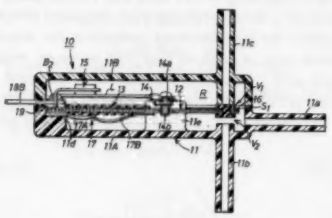
b. a bimetallic element having a stationary end secured to an inner wall of said housing and a movable end;

c. cut off valve means including a valve body fixed directly on the movable end of said bimetallic element for selectively closing one of said second and third ports and communicating the other of said second and third ports with said first port;

d. a heating coil coupled with said bimetallic element and adapted to be connected with a source of electricity;

e. a normally closed switch means for connecting said heating coil to said source of electricity to energize said heating coil and for disconnecting said heating coil from said source of electricity when said bimetallic element is deflected by the heat generated by said heating coil, said normally closed switch including a fixed contact mounted on an inner wall of said housing and a movable contact mounted on the movable portion of said bimetallic element;

f. a resistor arranged in parallel with said normally closed switch means for maintaining the electrical connection between said heating coil and said source of electricity after said bimetallic element is deflected and said normally closed switch means is opened, said fixed contact of said



normally closed switch means being connected to one end of said resistor and said movable contact of said normally closed switch means being connected to the other end of said resistor; and

g. means for providing snap-action with said bimetallic element when it is deflected, said means for providing snap-action comprising a first section formed of a U-shaped base spring plate, bowed and fixedly mounted at the stationary end of the bimetallic element and a second section comprising a U-shaped thin spring plate, bowed and secured to said movable portion of the bimetallic element, the legs of said spring plates being opposingly engaged with each other;

whereby, when said bimetallic element is deflected by heat of said heating coil, said cut off valve means selectively opens one of said second and third ports and communicates the other of said second and third ports with said first port through the hermetic chamber of said housing and said snap-action means and said parallel connected resistor maintain said bimetallic element in said deflected position until said source of electricity is disconnected from said resistor.

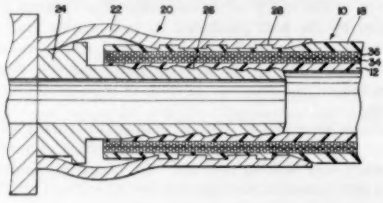
4,142,554
HOSE CONSTRUCTION

Donald E. Washkewicz, Bedford Heights, and Wayne S. Wasdiecker, Euclid, both of Ohio, assignors to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Oct. 28, 1977, Ser. No. 846,310
Int. Cl.[2] F16L *11/08, 39/00*
U.S. Cl. 138—109 **5 Claims**

1. A flexible composite hose comprising a core tube of synthetic thermoplastic material, two or more layers of fibrous reinforcement material disposed about said core tube, said two or more fibrous reinforcement layers being comprised of yarn twisted from one or more strands of said fibrous reinforcement material and having at last two twists per inch, said twisted yarn of each of said two or more fibrous reinforcement layers interlocking with said twisted yarn of the most adjacent rein-

forcement layers preventing relative longitudinal movement therebetween, said two or more reinforcement layers comprising a fist reinforcement layer bonded to said core tube and one or more reinforcement layers disposed about said first reinforcement layer in an unbonded relationship thereto and to each other, and a sheath of synthetic thermoplastic material covering said two or more layers of fibrous reinforcement material.



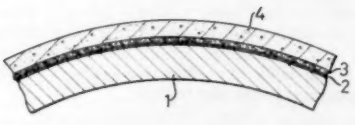
5. An improved connection between a swageable hose fitting and a hose comprising a core tube and two or more reinforcement layers of a fibrous twisted yarn disposed about said core tube, wherein the improvement comprises the interlocking of said twisted yarn of each of said two or more reinforcement layers with said twisted yarn of the most adjacent reinforcement layers preventing relative longitudinal movement therebetween during swaging of said fitting onto said hose.

4,142,555

CORROSION PREVENTIVE, COATED METAL PIPE

Jiro Satake; Tetsuzo Arai, both of Amagasaki; Yoshifumi Miyamoto, Kobe, and Hiroo Inoue, Nishinomiya, all of Japan, assignors to Sumitomo Kinzoku Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation-in-part of Ser. No. 756,564, Jan. 3, 1977, abandoned. This application Nov. 15, 1977, Ser. No. 852,000
Claims priority, application Japan, Jan. 19, 1976, 51-5315
Int. Cl.[2] F16L *9/14*
U.S. Cl. 138—143 **13 Claims**



1. In metal pipes coated with layers of corrosion preventive material and reinforcing material selected from the group consisting of silica sand, blast furnace slag, and synthetic or natural resin of a solid particle type, wherein the improvement comprises a corrosion preventive material containing:

(1) a first ingredient consisting essentially of isocyanate terminated polyurethane prepolymer formed from the reaction of polyether polyol with poly-isocyanate, and

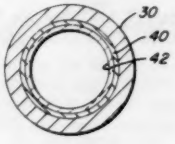
(2) a second ingredient consisting essentially of (i) amine base hardener and (ii) petroleum resin formed by heating and polymerizing the fraction of distillate of an unsaturated petroleum base hydrocarbon in the presence of a suitable catalyst, the carbon number of said hydrocarbon being essentially C_4 to C_5, said first ingredient and second ingredient being mixed prior to coating.

4,142,556

REFRACTORY LINING TUYERE FOR METALLURGICAL FURNACE

Arthur J. Pignocco, Franklin Township, Westmoreland County, and Robert H. Kachik, Washington Township, Westmoreland County, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Division of Ser. No. 549,630, Feb. 13, 1975, Pat. No. 4,048,352, which is a continuation-in-part of Ser. No. 332,972, Feb. 15, 1973, abandoned. This application May 2, 1977, Ser. No. 793,020
Int. Cl.[2] F16L *9/14*
U.S. Cl. 138—146 **3 Claims**



1. A tuyere for injecting into a metallurgical furnace a process material comprising an abrasive particulate solid and a suspending fluid, comprising:

(a) a metal pipe for conveying said process material;

(b) a lining deposited in said pipe which comprises the reaction product of an exothermic reaction mixture comprising a powdered fuel metal and a reducible metal oxide,

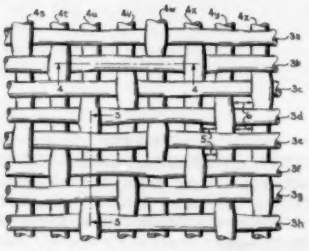
(c) said lining consisting of a first layer consisting essentially of a reduced metal phase metallurgically bonded to said pipe, and a second layer overlying said first layer and consisting essentially of an abrasion-resistant, refractory metal oxide.

4,142,557

SYNTHETIC PAPERMAKING FABRIC WITH RECTANGULAR THREADS

Robert H. Kositzke, Appleton, Wis., assignor to Albany International Corp., Albany, N.Y.

Continuation of Ser. No. 781,736, Mar. 28, 1977, abandoned. This application Apr. 3, 1978, Ser. No. 892,479
Int. Cl.[2] D03D *15/02*; D21F *1/10*; B01D *39/08*
U.S. Cl. 139—425 A **9 Claims**

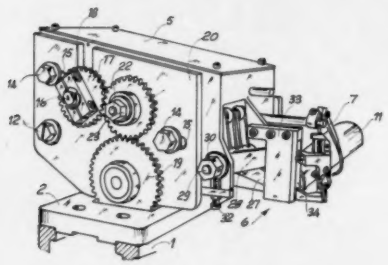


9. A papermaking fabric of interwoven warp and weft thread systems comprised of synthetic monofilament threads; the threads of one thread system being of substantially rectangular cross section before weaving with the widthwise side of the rectangular configuration being at least 1.2 times the height thereof; the thread systems being interwoven with one another with an irregular knuckle pattern; and a side of the rectangular configuration of each rectangular thread lying generally in the plane of the fabric and bearing against threads of the other thread system to resist rotational thread movement.

4,142,558
DEVICE FOR TUCKING, RETAINING AND CURLING THE WEFT AND TO PROVIDE A SELVEDGE OF A WOVEN FABRIC

Silvio Sbabo, Via Romana Rompato, 6, Schio (Province of Vincenza), Italy

Filed Jul. 18, 1977, Ser. No. 816,780
Claims priority, application Italy, Jul. 30, 1976, 41634 A/76
Int. Cl.[2] D03D *47/48*
U.S. Cl. 139—434 **3 Claims**



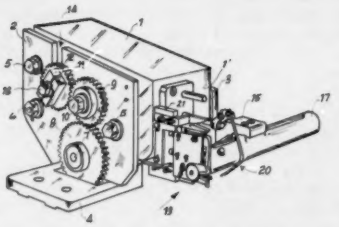
1. A device for cutting, retaining and tucking a weft end to form a selvedge, comprising a cutting assembly including two concurrently operated cutting blades, a yarn retaining assembly cooperating with the two cutting blades to retain the cut yarn, a pick up hook assembly adapted to tuck said yarn into the weft shed, positive cam actuators and linkages operative to sequentially control the yarn cutting and tucking operations, a housing containing said cam actuators and linkages, a first bracket member for supporting said housing and means for independently positioning the cutting assembly, wherein according to the improvement said yarn retaining assembly comprises a shoe member and a bearing plate cooperating therewith, said shoe member and one of said cutting blades having common support means, said shoe member being slidable in said common support means parallel to said cutting blades, said shoe member having spring means normally urging the shoe member beyond the cutting edge of said one cutting blade, and wherein said bearing plate and the other of said two cutting blades have common supporting means, said other of said two cutting blades having adjacent thereto said bearing plate facing said shoe member to clamp the yarn therebetween when the two cutting blades and the respective shoe member and the bearing plate are approached to one another and retain it during the cutting action of the blades.

4,142,559
DEVICE FOR PROVIDING SINGLE OR DOUBLE SELVEDGES FOR LOOMS

Silvio Sbabo, Via Romana Rompato, 6, Schio, (Vicenza), Italy

Filed Jul. 18, 1977, Ser. No. 816,779
Claims priority, application Italy, Jul. 30, 1976, 41635 A/76
Int. Cl.[2] D03D *47/48*
U.S. Cl. 139—434 **5 Claims**

1. A device for forming at least one selvedge, comprising a scissors type of cutting unit for cutting a yarn, at least one yarn retaining shoe for each selvedge, at least one pick up hook for each retaining shoe adapted to bring an end portion of the cut yarn back into the weft shed, positive cam actuators and linkages operative to sequentially control the yarn cutting and picking up operations, a sealed casing containing said actuators and linkages, and independent adjusting and positioning means for said cutting unit and for the temple cover and support, wherein according to the improvement said cutting unit comprises a vertical plate, a fixed blade at the front bottom portion of said plate, two pistons movable horizontally with translatory motion, and connected with said plate, a kinematic train imparting said translatory motion, said kinematic train comprising a cam cooperating with a lever and connecting rod, a C-like member journaled to said plate in a point thereof and having a cutting blade movable therewith with scissors-like movements and a jutting finger at a distance from said point, a

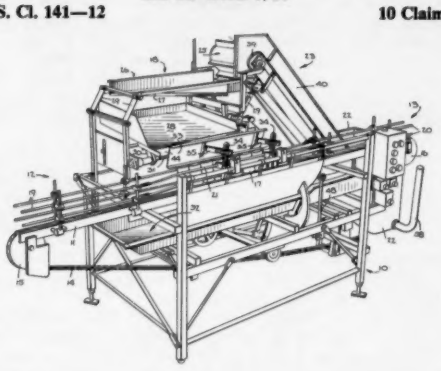


flat cam having limit stop arms controlling said motion and acting as travel limiter for the translatory motion of said C-like member, whereon said jutting finger abuts during said translatory motion to cause a cutting rotary movement of said C-like member.

4,142,560
OPEN-TYPE FILLING MACHINE

Bernard C. Eisenberg, Rockaway, N.J., assignor to Solbern Corp., Fairfield, N.J.

Filed Feb. 8, 1978, Ser. No. 876,108
Int. Cl.[2] B65B *1/20*
U.S. Cl. 141—12 **10 Claims**



1. A machine for filling containers to a preselected level, the machine having a longitudinal axis with an input end and an output end and including an elongated moving conveyor member for conveying containers along a linear path parallel to the longitudinal axis from the input end to the output end through a filling zone, and an approximately horizontal shaker pan mounted above the container conveyor in the filling region for reciprocal motion transverse to the linear path, the shaker pan having an edge extending substantially parallel to said linear path for discharging material into containers moving along the path in the filling region, a hopper positioned below the level of the container conveyor adjacent to the output end of the machine, an inclined product conveyor spaced from the container conveyor and moving in the opposite direction thereto, the inclined conveyor having a lower end within the hopper and an upper end above the level of said shaker pan, means for delivering product discharged from the upper end of the inclined conveyor to the shaker pan, and means for returning excess product from the filling zone to the hopper, wherein the improvement comprises:

said means for delivering product discharged from the upper end of the inclined conveyor to the shaker pan being an approximately horizontal intermediate pan having one

edge portion positioned underlying the upper end of the inclined conveyor and above the level of said first-mentioned shaker pan and means for moving product discharged from the upper end of the inclined conveyor across the surface of the pan in approximately the direction of movement of said inclined conveyor, said intermediate pan having a discharge edge extending diagonally with respect to and overlying the first-mentioned shaker pan, whereby materials distributed from the inclined conveyor onto the intermediate pan transversely to the longitudinal axis are moved on said intermediate pan to fall over the diagonal edge thereof so as to be substantially uniformly distributed across the width of the first-mentioned shaker pan.

9. A method for delivering a solid particulate product to a line of containers moving in a linear path from an input end to an output end of a filling zone that extends for a predetermined distance along the linear path, the method including raising portions of the product on an inclined upwardly moving surface from a lower level below the level of the bottoms of the line of containers at a location adjacent to the output end of the filling zone to an upper level above the level of the tops of the line of containers, the inclined surface being spaced from the linear path and moving in a direction opposite to the movement of the line of containers, discharging product from the moving inclined surface over an edge at the upper level perpendicular to the direction of movement of the inclined surface, delivering the product discharged from the inclined surface over said edge to an approximately horizontal surface positioned below the upper level of the inclined surface and having a discharge edge extending approximately parallel to and adjacent to the line of containers above the tops thereof through the filling zone, and shaking said approximately horizontal surface in a direction transverse to the line of containers in a manner to urge the product across said surface toward and over said discharge edge into said containers, wherein the improvement comprises said step of delivering the product discharged from the inclined surface to said approximately horizontal surface including:

discharging the product from the inclined surface over said edge at the upper level onto an intermediate approximately horizontal surface underlying said edge and having a discharge edge extending diagonally with respect to and overlying said first-mentioned horizontal surface,

urging the product across said intermediate surface in a direction approximately parallel to the direction of movement of the inclined surface, and

cascading the product over the length of the diagonal discharge edge of the intermediate surface onto said first-mentioned horizontal surface to distribute the product uniformly across the width of the first-mentioned horizontal surface in a direction extending substantially parallel to the linear path of the containers.

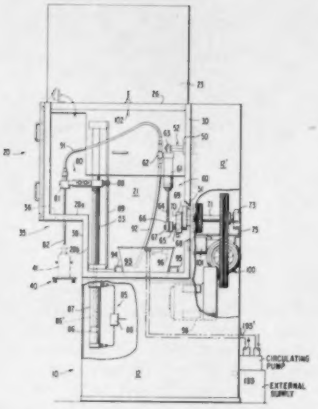
4,142,561

FILLING MACHINE WITH ENVIRONMENTAL CONTROL

Richard N. Bennett, Arbutus, and Lawrence W. Buckley, Baltimore, both of Md., assignors to National Instrument Company, Inc., Baltimore, Md.

Filed Jun. 27, 1977, Ser. No. 810,171
Int. Cl.[2] B65B *3/12*
U.S. Cl. 141—82 **32 Claims**

1. A filling machine for filling containers with a product which is not liquid at normal room temperature, comprising at least one nozzle means operable to be lowered into a respective container during the filling operation, at least one filling unit including a pump means having a suction stroke and a discharge stroke for accurately metering the amount of the product to be dispensed by said nozzle means into the respective container, connecting means including line means operable to connect the pump means with the nozzle means and to enable the product to be drawn into the pump means from a supply thereof during the suction stroke, and means for operating the filling machine including first means for operating each filling unit by drivingly connecting the pump means thereof with a drive means, second means for lowering and raising the nozzle means in timed relation to the filling operation of the filling unit, and third means for correlating the operation of said first and second means during a respective cycle of filling operation of the filling unit, which involves a suction stroke of the pump means occurring at least in part during the raising of the nozzle means by said second means, and a discharge stroke commencing after the nozzle means has been at least partially lowered



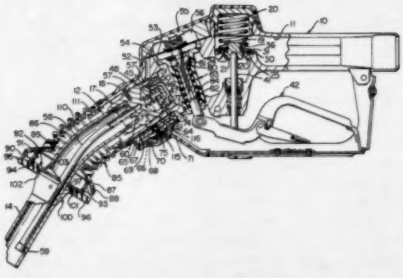
into the respective container, characterized by chamber means including chamber walls delimiting the chamber for accommodating therein said pump means, said nozzle means and said line means, and temperature control means for maintaining the temperature in said chamber means at such a level that the product is in substantially liquid condition while being drawn in by the pump means during the suction stroke thereof and while being discharged through the nozzle means during the discharge stroke of the pump means, said drive means being disposed outside of said chamber means and being drivingly connected with said pump means through a chamber wall.

4,142,562

AUTOMATIC SHUT-OFF NOZZLE HAVING UNIQUE VALVE

Robert L. Murray, Dayton, Ky., assignor to Dover Corporation, New York, N.Y.

Filed Mar. 14, 1977, Ser. No. 776,944
Int. Cl.[2] B65B *57/14*
U.S. Cl. 141—206 **23 Claims**



1. An automatic shut-off nozzle comprising a body having an inlet and an outlet; a spout communicating with said outlet and having its free end for disposition in an opening of a fill pipe of a vehicle tank or the like; said body having a passage between said inlet and said outlet; valve means in said body to control

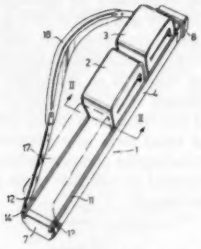
flow of liquid from said inlet to said outlet by controlling flow through said passage; means urging said valve means to its closed position; manual operated means controlling the operation of said valve means; release means to release said manual operated means to allow closing of said valve means and stoppage of liquid flow; means to return vapor from the tank being filled; sealing means to form a seal between the fill pipe opening and said vapor return means when said spout is disposed in the fill pipe; means to activate said release means to close said valve means to stop liquid flow through said body when the level of liquid in the tank reaches a predetermined level; said valve means including means slidably disposed in said passage and sealing means supported on said slidably disposed means; seal engaging means in surrounding relation to a portion of said passage for engagement by said sealing means to seal the portion of said passage to prevent flow from said inlet to said outlet; and said slidably disposed means having first means downstream of said sealing means and disposed in the portion of said passage downstream of said sealing means when said sealing means engages said seal engaging means to prevent flow through said passage, said sealing means engaging said seal engaging means to prevent flow from said inlet to said outlet until a predetermined opening is provided between said first means of said slidably disposed means downstream of said sealing means and the portion of said passage to enable liquid to flow therebetween to said outlet by movement of said slidably disposed means by said manual operated means.

4,142,563

GOLF BAG

Bo I. Ackerfeldt, Ascona, Switzerland; Curt Olsson, Bandhagen, and Carl-Göran Crafoord, Bromma, both of Sweden, assignors to Sikob Svensk Industris Konstruktions-Och Berakningskontor AB, Sollentuna, Sweden

Filed Nov. 3, 1976, Ser. No. 739,536
Int. Cl.[2] A63B *55/00*
U.S. Cl. 150—1.5 C **8 Claims**



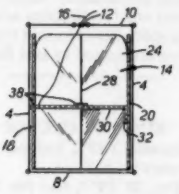
1. A golf bag for storage and transport of golf clubs, comprising a high, in comparison to its height relatively narrow container having rigid peripheral walls of a stiff material, preferably a plastics material, and a bottom at its lower end and being open at its upper end, in which container golf clubs can be inserted with their shafts so that substantially only the heads of the clubs protrude from the container at its upper open end, at least one separate storage bag, and means for detachably mounting said storage bag on the outside of said container, said mounting means including at least two, parallel, external key-grooves in the peripheral wall of said container extending in the longitudinal direction of the container and at least two, parallel, external key-ribs on the rear side of said storage bag, whereby the storage bag can be detachably mounted on the outside of said container in that said key-ribs on the storage bag are inserted in axial direction into said key-grooves in the peripheral wall of the container.

4,142,564

COLLAPSIBLE BAG WITH EXPANDABLE BAG INSERT

Martin Zoland, 76 Raglan St., Preston, Melbourne, Australia (3072)

Filed Dec. 5, 1977, Ser. No. 857,081
Int. Cl.[2] A45C *7/00*
U.S. Cl. 150—31 **9 Claims**



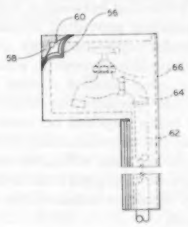
1. A collapsible bag and an expandable bag insert located therein said insert comprising a pair of generally parallel plate members and a tongue, said tongue being rotatably mounted between the plate members for rotation between a first position wherein the tongue lies generally parallel to the plate members and a second position wherein the tongue is transverse to the plate members, and operating means accessable from the exterior of the bag which means are operable to cause movement of the tongue from its first to its second position thereby causing the tongue to separate said plate members and expand the bag.

4,142,565

INSULATING DEVICE FOR FLUID CONDUIT

Hermon L. Plunkett, Sr., P.O. Box 79, Maxville, Fla. 32265

Filed Jun. 20, 1977, Ser. No. 807,981
Int. Cl.[2] B32B *7/08;* **B65D** *65/08*
U.S. Cl. 150—52 R **5 Claims**



1. An insulating device for encasing an elongated fluid conduit, having an external equatorial dimension, said device comprising

a. a first elongated sheet of flexible heat-insulating material having a length terminated by a top edge and a bottom edge, having a width slightly greater than the external equitorial dimension of said conduit and terminated by a first side edge and a second side edge, and having an interior conduit-facing side and an exterior side;

b. a first elongated releasable adherent strip securingly engaged to said interior conduit-facing side of said sheet adjacent said first side edge and extending therealong substantially the length of said first side edge;

c. a second releasable adherent strip securingly engaged to said exterior side of said sheet adjacent said second side edge, and extending therealong substantially the length of said second side edge;

d. a neck of said first sheet extending centrally from said top edge; and

e. a second sheet of flexible heat-insulating material connected by said neck to said first sheet, said second sheet

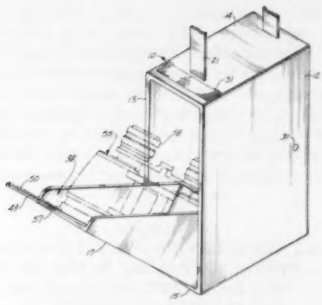
having an interior conduit-facing side and an exterior side and a first lateral extension and a second opposed lateral extension, each said lateral extension terminating in an outer edge, a third releasable adherent strip securingly engaged to said interior conduit-facing side of said first lateral extension immediately adjacent said outer edge thereof, and a fourth releasable adherent strip securingly engaged to said interior conduit-facing side of said second lateral extension immediately adjacent said outer edge thereof said third and fourth strips when attached providing an encasing space between said first and second extensions for a valve connected to said fluid conduit.

4,142,566

BINOCULAR CASE

Myron G. Stolp, Arcadia, Calif., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Dec. 28, 1977, Ser. No. 865,229
Int. Cl.[2] A45C *11/08*
U.S. Cl. 150—52 J **7 Claims**



1. A binocular case, comprising a housing having a moveable wall which can be shifted between a first closed position and a second open position providing access to the housing interior, and a binocular-supporting tray connected to the moveable wall to be moveable therewith, whereby shifting the moveable wall to the open position carries a binocular supported in the tray at least partially out of the housing;

the moveable wall being disposed between top and bottom walls of the case, the tray extending from the moveable wall inwardly into the case when the case is closed, the tray being configured to support the binocular within the closed case with objective lenses of the binocular facing the moveable wall;

the tray including a floor tab extending from the moveable wall at an angle of less than ninety degrees so the floor tab slopes upwardly as it extends into the case interior when the moveable wall is closed to support a side surface of the binocular.

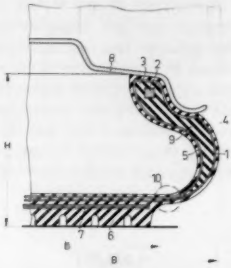
4,142,567

PNEUMATIC VEHICLE TIRE

Peter Johannsen, Hannover-Herrenhausen; Julius Peter, Hanover, and Gerhard Mauk, Wunstorf, all of Fed. Rep. of Germany, assignors to Continental Gummi-Werke Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Continuation of Ser. No. 709,301, Jul. 28, 1976, abandoned. This application Apr. 17, 1978, Ser. No. 897,137
Claims priority, application Fed. Rep. of Germany, Aug. 6, 1975, 2535008
Int. Cl.[2] B60C *17/00*
U.S. Cl. 152—353 R **3 Claims**

1. A flattened pneumatic vehicle tire for placement upon a wheel rim with rim flanges comprising a carcass having a width sufficient to permit said carcass to freely span the wheel rim upon which the tire is to be placed, said carcass having tapered side walls which deform for emergency running characteristics in case of partial or complete pressure loss and tire beads with pull-resistant core rings for seating said tire on a wheel rim adjacent the rim flanges thereof, said side walls extending outwardly from said beads to overlie the rim flanges and then curving radially outwardly and axially inwardly to the transverse tread portion of said carcass, said tread portion being circumferentially inextensible and substantially cylindrical between said side walls, a tread strip centrally and circumferentially arranged upon said tread portion, said tread strip being arranged upon said carcass with sharply defined edges and having a width equalling up to two-thirds of the total width of said tire as measured between the outer edges of the arc of curvature of said curved marginal areas of said side walls, the height of the cross section of said tire at a maximum equalling one-third the width of said tire, said carcass having a thickness continuously decreasing from its maximum thickness in the region of said tire beads to a minimum thickness which is a fraction of said maximum thickness and located at a transition area at the edges of said tread strip, and having two fabric plies imbedded in said carcass and respectively looped around said core rings and extending across said tread portion beneath said tread strip, the distance between said plies decreasing from the area of said beads in the direction toward said tread strip; and an elastically deformable incompressible intermediate layer between said fabric plies, said intermediate layer being wedge-shaped and comprised of homogeneous elastomeric material and enclosed by said plies in the curved marginal areas of said side walls and surrounding said core rings and decreasing in thickness from said side walls adjacent said core rings to said transition area which is an essentially thinner deflection and lighter deformable area of minimum thickness between each side wall and said tread strip to provide maximum deflection adjacent said tread strip as a compromise influence in traveling comfort during the pressure inflated operation, while the elastomeric material in said side walls provides a cushion overlying said rim flanges.



4,142,568

BIAS TIRE WITH EMBEDDED WIRE BREAKERS

Jacob Kleijwegt, Arlon, Belgium, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Feb. 23, 1977, Ser. No. 771,226
Int. Cl.[2] B60C *9/06, 9/08*
U.S. Cl. 152—354 R **6 Claims**

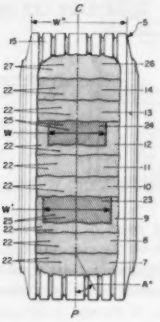
1. A tire comprising:

(a) a number of carcass plies, each of which is reinforced with textile cords of the group of rayon, nylon and polyester, the textile cords being disposed at substantially the same angles in the range of 20–55 degrees relative to the centerplane of the tire, when the tire is vulcanized and uninflated, the textile cords of adjacent carcass plies separating the breaker strips being in crossed relationship;

(b) a tread and pair of sidewalls surrounding the carcass plies and terminating at at least one pair of annular, inextensible beads; and

(c) at least two successive breaker strips embedded in the

carcass plies in the area of the tread only, the widest of the breaker strips having a width which is not substantially greater than the width of the tread of the tire in the footprint of the tire when the tire is inflated and loaded at a rated standard load recommended by the manufacturer of the tire, each of said successive breaker strips being sandwiched between at least two pair of carcass plies and



reinforced with high modulus cords of the group of materials of steel and aromatic polyamide, said high modulus cords being disposed at angles that are substantially the same as the angles of the textile cords of carcass plies adjacent said breaker strips, the cords of said successive breaker strips being of the opposite hand and in crossed relationship.

4,142,569

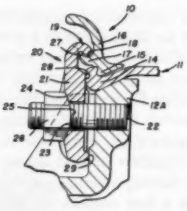
SEPARABLE SAFETY RIMS

William D. Walther; Louis F. Bolton, both of Dayton, and Robert A. DeRegnaucourt, Centerville, all of Ohio, assignors to The Dayton Steel Foundry Company (Dayton-Walther Corporation), Dayton, Ohio

Continuation of Ser. No. 606,502, Aug. 21, 1975, abandoned, which is a continuation of Ser. No. 197,666, Nov. 11, 1971, abandoned. This application Nov. 4, 1977, Ser. No. 848,515

Int. Cl.[2] B60B *1/14, 3/04, 3/10, 25/14*

U.S. Cl. 152—409 **11 Claims**



1. The combination of a vehicle wheel and at least one tire carrying rim, each said rim comprising a fixed integral bead flange and a removable bead ring having a radially directed bead flange, characterized in that the medial portion of said bead flange of the removable bead ring has an axial projection providing a radially outwardly oriented annular shelf surface and that the wheel mounts a restraining means comprising an axial projection providing a radially inwardly oriented surface which in mounted condition is positioned and spaced radially outwardly of and opposed to said annular shelf surface, said opposed surfaces being intended for mating engagement in the event a tire on said rim is unintentionally deflated.

4,142,570

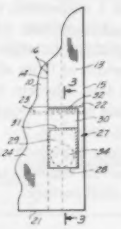
WINDOW CURTAIN HAVING WEIGHT-RECEIVING POCKETS

Eli Heimberg, North Dartmouth, Mass., assignor to Cameo Curtains, Inc., New York, N.Y.

Filed Jun. 22, 1977, Ser. No. 808,855

Int. Cl.[2] A47H *1/00*

U.S. Cl. 160—349 R **9 Claims**



1. A window curtain comprising:

(a) a sheer textile fabric panel, said panel being a single layer of material throughout most of its area, and said panel having a plurality of vertical fabric edges extending for the full vertical height of said panel,

(b) a pocket fixed to said panel near the lower end of each vertical fabric edge, each pocket being made of material forming no part of the remainder of the curtain and having an opening through which access is available to the interior of the pocket, said pockets being in registry only with said vertical fabric edges and the remainder of said panel being devoid of pockets and

(c) a weight located within each pocket, said weight being readily removable from its respective pocket through said access opening, and said weight being devoid of securing means so that said pocket is the sole means mounting said weight on said panel.

4,142,571

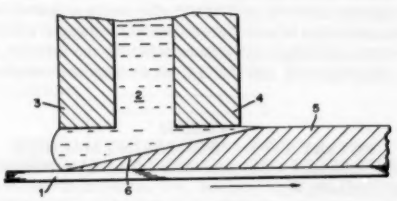
CONTINUOUS CASTING METHOD FOR METALLIC STRIPS

Mandayam C. Narasimhan, Flanders, N.J., assignor to Allied Chemical Corporation, Morristown, N.J.

Continuation-in-part of Ser. No. 734,776, Oct. 22, 1976, abandoned. This application Aug. 2, 1977, Ser. No. 821,110

Int. Cl.[2] B22D *11/06, 11/10, 11/00*

U.S. Cl. 164—88 **11 Claims**



1. Apparatus for making continuous metal strip from the melt comprising, in combination:

(a) a movable chill body providing a chill surface for deposition thereon of molten metal for solidification, said chill body being adapted to provide longitudinal movement of said chill surface at velocity of from about 100 to about 2000 meters per minute;

(b) a reservoir for holding molten metal, said reservoir including heating means for maintaining the temperature of

the metal above its melting point, said reservoir being in communication with

(c) a slotted nozzle for depositing molten metal onto said chill surface, located in close proximity to said chill surface, having its slot arranged generally perpendicular to the direction of movement of the chill surface, said slot being defined by a pair of generally parallel lips, a first lip and a second lip numbered in direction of movement of the chill surface, wherein said slot has a width of from about 0.2 to about 1 millimeter, measured in direction of movement of the chill surface, wherein said first lip has a width at least equal to the width of said slot, and said second lip has a width of from about 1.5 to about 3 times the width of said slot, wherein the gap between the lips and the chill surface is from about 0.1 to about 1 times the width of said slot; and

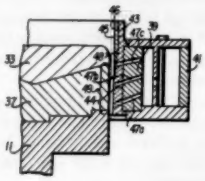
(d) means for effecting expulsion of the molten metal contained in said reservoir through said nozzle for deposition onto the moving chill surface.

4,142,572

SHIELD FOR ELECTROMAGNETIC CASTING

James L. Kirby, Mechanicsville, Va., assignor to Reynolds Metals Company, Richmond, Va.

Filed Mar. 24, 1978, Ser. No. 889,950
Int. Cl.[2] B22D *27/02*
U.S. Cl. 164—147 **10 Claims**



1. In an electromagnetic continuous casting system of the type including a molten-metal supply means for continuously supplying molten metal to a first end of an ingot being cast at a casting station, a means for moving a second end of the ingot away from the supply means, a loop-shaped inductor surrounding the ingot at said casting station for creating an electromagnetic field at said casting station to shape said molten metal, and an electrically conductive shield positioned between said loop-shaped inductor and said ingot;

the improvement wherein is further included a sheet of electrically insulative material cohered to the inner surface of said loop-shaped inductor at substantially all contiguous surfaces, said shield also being cohered to the inner surface of said sheet of insulative material at substantially all contiguous surfaces, whereby the inductor, insulative material, and shield form a composite member.

4,142,573

ROTARY TYPE CORE MAKING MACHINE

Anatol Michelson, Columbus, Ohio, assignor to Ashland Oil, Inc., Ashland, Ky.

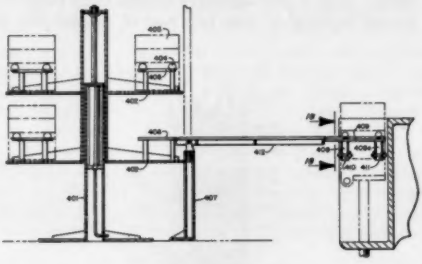
Division of Ser. No. 784,939, Apr. 5, 1977, Pat. No. 4,083,396. This application Jan. 20, 1978, Ser. No. 870,942
Int. Cl.[2] B22C *11/04, 15/00*
U.S. Cl. 164—169 **1 Claim**

1. Apparatus for installing core boxes in a rotary core making machine, said core boxes being provided with rollers on the sides thereof, comprising:

(a) at least one rotatable horizontally positioned circular plate adjustable as to height;

(b) a first plurality of pairs of rail sections rigidly attached in a horizontal position to said circular plate, corresponding in elevation to said rollers on said core boxes, arrayed around the circumference of said plate;

(c) a second pair of rails pivotally mounted at one end and positioned in proximity to the edge of said circular plate;



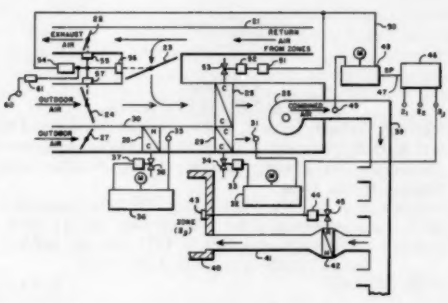
(d) corresponding pairs of third rail sections mounted at desired intervals on the circumference of said core making machine and adjustable to a level corresponding to the level of said second pair of rails when placed in a horizontal position.

4,142,574

OPTIMIZED AIR CONDITIONING SYSTEM

Gideon Shavit, Highland Park, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 30, 1974, Ser. No. 537,619
Int. Cl.[2] F25B *29/00*
U.S. Cl. 165—16 **12 Claims**



1. A building air conditioning system for optimally controlling a condition in air discharged to a plurality of zones, said building air condition system having return air source means for providing return air from said zones, first and second outdoor air source means for providing first and second portions of outdoor air, a mixing chamber for mixing return air and said first portion of outdoor air, mixed air controlling means for controlling said condition of said mixed air, said mixed air controlling means having a return air damper for controlling said return air and a first outdoor air damper for controlling said first portion of outdoor air, cooling means for said second portion of outdoor air, discharge means for supplying discharge air comprising a combination of the mixed air and the second portion of outdoor air to said zones, said system comprises:

first means for sensing the condition of the zone having the greatest demand;

second means for sensing the condition of the discharge air; and,

third means connected to said first and second means and to said mixed air controlling means whereby said mixed air is controlled such that, when said mixed air is combined with said second portion of outdoor air, said discharge air

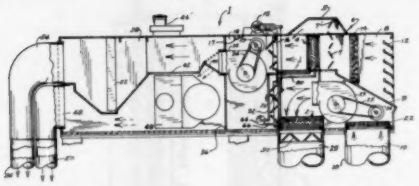
will substantially satisfy said zone having the greatest demand.

4,142,575

RUN-AROUND TYPE ENERGY RECOVERY SYSTEM

Walter P. Glancy, 7120 Baxtershire, Dallas, Tex. 75230

Continuation-in-part of Ser. No. 423,844, Dec. 11, 1973, Pat. No. 3,926,249. This application Nov. 12, 1975, Ser. No. 631,274
Int. Cl.[2] F25B *27/02*
U.S. Cl. 165—29 11 Claims



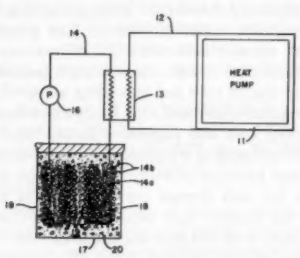
1. Apparatus to recover energy required to maintain the temperature of air in an enclosure within a predetermined temperature range comprising: means to admit fresh air into the enclosure from outside; means to exhaust air from inside the enclosure to the outside; a first heat exchanger in heat exchange relation with the fresh air; means sensing temperature of the fresh air after the fresh air has passed over the first heat exchanger; a second heat exchanger in heat exchange relation with the exhaust air; a closed system connected to the first and second heat exchangers; means to circulate liquid through the closed system between the first and second heat exchangers; and means to vary the flow rate of liquid through the closed system between the first and second heat exchangers in response to a change in temperature of the fresh air stream to maintain a constant mass flow of liquid through the first and second heat exchangers.

4,142,576

HEAT PUMP SYSTEM WITH IMPROVED HEAT TRANSFER

Elijah R. Perry, Portola Valley, and Mario Rabinowitz, Menlo Park, both of Calif., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Division of Ser. No. 718,348, Aug. 27, 1976, Pat. No. 4,042,012. This application May 26, 1977, Ser. No. 800,705
Int. Cl.[2] F25B *27/02;* F28F *1/22*
U.S. Cl. 165—45 6 Claims



1. In a heat pump structure for cooling or heating a conditioned air space,

(a) a heat exchange zone,

(b) a refrigerant fluid line extending through said heat exchange zone,

(c) an underground heat pipe extending through said heat exchange zone, and including a heat conductive portion, the underground portion of said pipe being continuous,

(d) back-fill soil around said underground pipe heat conductive portion, and

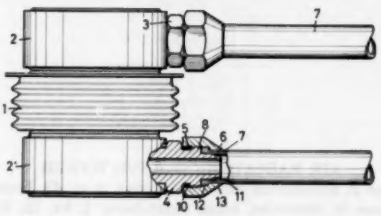
(e) a plurality of water-filled bags dispersed in said back-fill soil.

4,142,577

COOLING DEVICE FOR A LIQUID-COOLED SEMICONDUCTOR POWER COMPONENT

Erwin Klein, Dresdnerstr. 5, Heddesheim, Fed. Rep. of Germany (6805)

Filed Mar. 10, 1977, Ser. No. 776,228
Int. Cl.[2] F28F *9/26;* H01L *25/04*
U.S. Cl. 165—80 1 Claim



1. Cooling device for a liquid-cooled semiconductor power component of the type having a disc cell formed with two main contact surfaces and electrical and thermal pressure-contacting means therefor in an insulating casing, and having means for liquid cooling including cooling capsules through which liquid flows, the cooling capsules being connected by a clamping device to the two main contact surfaces of the disc cell so as to have the electrical potential thereof and being selectively couplable through a liquid-conducting support bar to a plurality of semiconductor power components, comprising insulating screw connections for connecting union pipes and connecting pipes for the coolant electrically insulatingly to the cooling capsules with an inclusion of at least partly cold-deformable material of said insulating screw connections, the cooling capsules being connected mutually and to a cooling source coolant-wise in series and having doubly stepped-down connecting nozzles, one of the steps thereof having a greater diameter than that of the other step and being formed with an external thread, a transition surface formed on said connecting nozzles between said steps thereof and having a greater diameter than the diameters of both of said steps, respectively, said transition surface being a stop for the pipe connected to the respective connecting nozzle, and said other step forming a support ring for the pipe, and a screw cap matched to the shape of the respective connecting nozzle disposed on the pipe and, in tightened condition on the connecting nozzle, holding a cold-deformed portion of the end of the pipe between the other step of the respective connecting nozzle and a corresponding recess formed in said screw-cap, and including expansion bends formed at least in the connecting pipes between the cooling capsules.

4,142,578

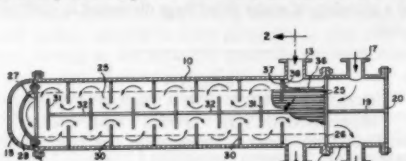
HEAT EXCHANGER IMPINGEMENT PROTECTION

Hosea E. Smith, Baytown, Tex., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Sep. 12, 1977, Ser. No. 832,694
Int. Cl.[2] F28F *19/00*
U.S. Cl. 165—81 12 Claims

1. In a shell-and-tube heat exchanger or similar device having tubes exposed to a fluid inlet located between first and second baffles or similar transverse members extending substantially perpendicular to the tubes, the improvement which comprises tube shields positioned on the exposed surfaces of said tubes adjacent said inlet, said tube shields being secured at one end to said first transverse member in substantially fixed

position and being restrained at the other end but free to move longitudinally with respect to the tubes and said second transverse member, and means connected to said second transverse member for restraining said tube shields.

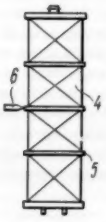


4,142,579

AIR RADIATOR COOLING TOWER

Boleslav B. Kazanovich, ulitsa Yakornaya, 2, kv. 43, Leningrad; Germes R. Santurian, ulitsa Sayat-Nova, 1, kv. 15, Erevan; Petr A. Fischenko, ulitsa Telmana, 30, kv. 36; Iosif A. Potapenko, ulitsa Vishnevaya, 6, kv. 99, both of Krasnodar; David M. Budnyatsky, 6 Sovetskaya ulitsa, 12, kv. 35, Leningrad; Felix K. Akopdzhanian, ulitsa Tumaniana, 38, kv. 33, Erevan; Tsolak R. Oganesian, mikroraion, 53, kv. 37, Razdan Armyanskoi SSR; Edvard S. Kazarian, ulitsa Teriana, 4, kv. 112, Erevan; Salikh I. Dzhanbaev, ulitsa Saltykova-Schedrina, 10, kv. 1; Alexandr I. Seryapov, ulitsa Staro-Kubinskaya, 119, kv. 57, both of Krasnodar; Albert T. Shakhnazarian, ulitsa Narsesiana, 1, kv. 6; Murad S. Mezhdo, ulitsa Teriana, 4, kv. 19, both of Erevan; Leverie L. Bachilo, ulitsa Antonova-Ovseenko, 13, korpus 1, kv. 10, Leningrad; Anatoly P. Bushmin, ulitsa Kommunarov, 56, kv. 33, Krasnodar; Mikhail B. Gershman, Moskovsky prospekt, 104, kv. 70; Anatoly I. Samokhvalov, Bolshie Polyanki, 21, kv. 89, both of Yaroslavl, and Georgy S. Oganesian, ulitsa Metallistov, 13, kv. 42, Erevan, all of U.S.S.R.

Continuation of Ser. No. 531,284, Dec. 10, 1974, abandoned.
This application May 16, 1977, Ser. No. 797,392
Int. Cl.[2] F28F *13/10, 19/00, 17/00*
U.S. Cl. 165—84 12 Claims



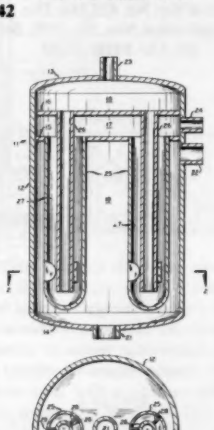
1. An air radiator cooling tower comprising a piping system comprising tubular elements, means for circulating water in said tubular elements for cooling said tubular elements, tubular girder means for joining said elements into groups, an exhaust tower for circulation of cooling air; means for preventing freezing of said tubular elements by preventing the crystallization of ice on the walls of the tubular elements comprising a rod waveguide having one end secured to said tubular girder means of the tubular elements being cooled, means for producing oscillations operatively connected to the other end of said rod waveguide for excitation of oscillations to be transmitted via said rod waveguide by way of contact over the surface of said tubular elements and/or the medium being cooled.

4,142,580

BAYONET HEAT EXCHANGER HAVING MEANS FOR POSITIONING BAYONET TUBE IN SHEATH TUBE

Clyde E. Bailey, Beatrice, Nebr., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 19, 1976, Ser. No. 743,194
Int. Cl.[2] F28D *7/12*
U.S. Cl. 165—142 10 Claims



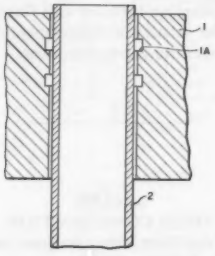
1. In a bayonet heat exchanger having means defining a first fluid manifold chamber, means defining a second fluid manifold chamber, means defining a heat exchanger chamber, a plurality of sheath tubes extending from said first fluid manifold chamber into said heat exchanger chamber, each of said sheath tubes having an open first end connected in fluid communication with said first manifold chamber and a closed distal end, a plurality of bayonet tubes, each of said bayonet tubes extending from said second fluid manifold chamber a substantial distance into a respective sheath tube through the open first end of the respective sheath tube, the distal end of each bayonet tube being open, the external dimensions of each bayonet tube being smaller than the corresponding internal dimensions of the respective sheath tube to provide an annular fluid flow passageway between said bayonet tube and the respective sheath tube, and means for maintaining the distal portion of each bayonet tube spaced from the transversely adjacent portion of the respective sheath tube while permitting the passage of fluid through the respective annular flow passageway; the improvement wherein said means for maintaining comprises spacer means secured to said transversely adjacent portion of the respective sheath tube and providing an opening through which the respective bayonet tube freely extends at least generally coaxially with the respective sheath tube, each said spacer means comprising a plurality of spacer elements, each said sheath tube having a plurality of longitudinal slots extending through the wall thereof corresponding in number and location to the number and location of said corresponding spacer elements, with the size and shape of each of said slots corresponding to the size and shape of a respective spacer element, each said spacer element being a solid bar element with the long dimension thereof at least generally parallel to the elongated axis of the respective sheath tube, each said bar element extending inwardly through a respective slot of a respective sheath tube with said bar element fixedly secured to the wall of the respective sheath tube to form a fluid tight joint therebetween and having at least the innermost side surface of the bar element diverging from the respective bayonet tube in the direction of said first fluid manifold chamber.

4,142,581

TUBE-HOLE STRUCTURE FOR EXPANDED TUBE-TO-TUBE-SHEET JOINT

Yuji Yoshitomi; Zensuke Tamura; Hideaki Kamohara; Keiji Omura; Yoshimasa Murakami; Tadasi Takata, and Teruo Nuwa, all of Kudamatsu, Japan, assignors to Hitachi, Ltd., Japan

Filed Mar. 30, 1977, Ser. No. 782,743
Claims priority, application Japan, Apr. 2, 1976, 51-35929
Int. Cl.[2] F28F *9/16*; F16L *41/00*
U.S. Cl. 165—173 8 Claims



1. A tube-hole structure for an expanded tube-to-tube-sheet joint wherein at least one circumferential groove is formed on the surrounding wall of each tube hole of a sheet into which each tube member is inserted and uniformly expanded to provide a joint, characterized in that the axial dimension of each said groove is in the range from about $1.5/\beta$ to about $3.0/\beta$ (β being calculated from

$$\sqrt[4]{\frac{3(1-\nu^2)}{R^2t^2}}$$

wherein R is the mean radius of the tube member to be expanded, t is the wall thickness of the tube member, and ν is the Poisson's ratio).

4,142,582

CHROME LIGNOSULFONATES AS ADDITIVES IN OIL RECOVERY PROCESSES INVOLVING CHEMICAL RECOVERY AGENTS

George Kalfoglou, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Continuation-in-part of Ser. No. 591,573, Jun. 30, 1975, abandoned, and Ser. No. 715,957, Aug. 19, 1976, abandoned. This application Nov. 10, 1977, Ser. No. 850,186
Int. Cl.[2] E21B *43/22*
U.S. Cl. 166—273 10 Claims

1. In a method for recovering oil from a subterranean formation containing oil and having an injection well and a production well wherein an aqueous surfactant solution is injected into the injection well in order to drive the oil to the production well wherein it is

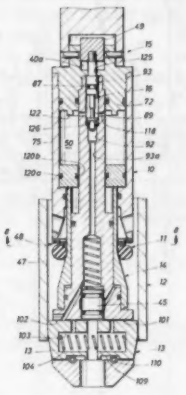
injecting into the injection well in admixture with the surfactant a chrome lignosulfonate additive consisting of lignosulfonate salts having a cation selected from the group consisting of calcium, magnesium, sodium, potassium and ammonium reacted with dichromate and/or sodium and-/or ammonium lignosulfonates reacted with chromium sulfate in amounts effective for reducing the extent of adsorption of the surfactant by the formation matrix.

4,142,583

WELL TOOL PACK-OFF WITH SINKER BAR RELEASE MEANS

Emmet F. Brieger, Bonito Rte., Nogal, N. Mex. 88341

Filed Sep. 2, 1977, Ser. No. 830,176
Int. Cl.[2] E21B *21/00, 23/00*
U.S. Cl. 166—311 15 Claims



1. A method for flushing perforations in earth formations traversed by a cased well bore wherein a tubing string extends between a surface wellhead to a downhole packer location and has its lower open end arranged for fluid communication with perforations extending through such cased well bore and into earth formations, including the steps of:

lowering a pack-off device through a tubing string where such device automatically sets itself against movement in a upper direction and provides a fluid-tight pack-off of such device with respect to the tubing string so that the pressure below the pack-off is that of the earth formation traversed by perforations;

reducing the pressure above the pack-off for creating a pressure differential with respect to the pack-off;

dropping a bar from the surface for engaging the pack-off device and suddenly releasing the pack-off thereby causing the sudden flow of fluid from such perforations for cleaning of such perforations.

3. Apparatus for use in well bores comprising a well tool sized for passage through a tubing string,

said well tool including:

an elongated body assembly sized for passage through a tubing string, latch means or said body assembly for latching said body assembly with respect to the tubing string and preventing movement of the body assembly upwardly with respect to the tubing string, pack-off means on said body assembly for sealing the cross-section of the body-assembly with respect to the tubing string to withstand a pressure differential; actuating means for actuating said pack-off means to a sealing position; and means on said body assembly for releasing said pack-off means from a sealing position in response to an impact member dropped through the tubing string.

4,142,584

TERMINATION MEANS FOR A PLURALITY OF RISER PIPES AT A FLOATING PLATFORM

John H. Brewer, Irvine, and Peter G. Harwood, Mission Viejo, both of Calif., assignors to Compagnie Francaise des Petroles, Paris, France

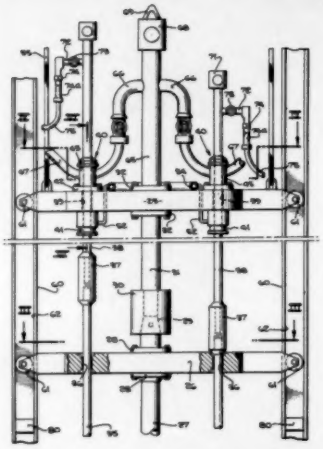
Filed Jul. 20, 1977, Ser. No. 817,159
Int. Cl.[2] E21B *33/035*
U.S. Cl. 166—359 11 Claims

1. A termination means for a marine production riser system

at a floating platform having a constant tension means and a pressure fluid source, the riser system including a central riser pipe and a plurality of satellite riser pipes, comprising:

means for supporting said central riser pipe including

a plate transverse to said central riser pipe and having openings for passage of said central and saellite riser pipes,



said plate being connected to and suspended by said constant tension means on said platform; and

a fluid pressure actuated tension compensator means carried by said plate for each satellite riser pipe for tensioning thereof.

4,142,585

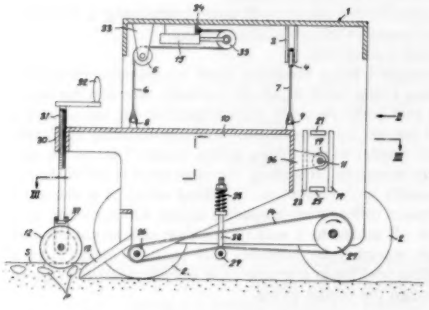
DIGGER ASSEMBLY FOR ROOT-CROP HARVESTER

Günter Böhner, and Friedhelm Wolfram, both of Weimar, German Democratic Rep., assignors to Veb Weimar Werk, Stammbetrieb des Veb Weimar Kombinat, Weimar, German Democratic Rep.

Filed Sep. 20, 1977, Ser. No. 834,867

Int. Cl.[2] A01D *13/00*

U.S. Cl. 171—82 **10 Claims**



1. An implement for the harvesting of root crops buried in furrow slices, comprising:

a vehicle displaceable in the direction of said furrow slices, said vehicle having a forwardly open body;

a generally horizontal frame within said body having a front end projecting from said body;

three-point suspension means in said body holding said frame with limited realtive freedom of motion in any direction, said suspension means including a transverse first cable anchored to opposite sides of a rear part of said frame, idler means in said body above said frame engaged by said first cable enabling said frame to tilt about a generally horizontal longitudinal axis, and a second cable longitudinally spaced from said first cable rising from a forward part of said frame and anchored to said body thereabove;

a plurality of parallel plows on said front end adapted to dig up respective furrow slices;

a screen conveyor extending rearwardly from said plows at the bottom of said frame;

a plurality of pilot wheels on said front end disposed ahead of said plows for riding said furrow slices; and

a lost-motion coupling between said frame and said body restricting the relative mobility thereof in at least the longitudinal and transverse directions.

4,142,586

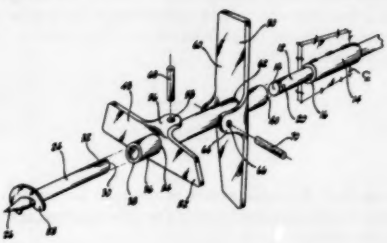
TINES CONSTRUCTION

Earl L. Miner, Long Lane, Mo., assignor to Detroit Tool & Engineering Co., Lebanon, Mo.

Continuation-in-part of Ser. No. 700,760, Jun. 29, 1976. This application Jun. 13, 1977, Ser. No. 806,183

Int. Cl.[2] A01B *33/14*

U.S. Cl. 172—42 **12 Claims**



12. A tines assembly comprising:

a. a drive shaft having a transverse aperture,

b. a front shaft having a transverse aperture,

c. a sleeve disposed in connecting coaxial relation with said front shaft and said drive shaft and having forwardly and rearwardly disposed transverse apertures, the forwardly disposed transverse apertures being aligned with the transverse aperture of the front shaft and the rearwardly disposed apertures being aligned with the transverse aperture of the drive shaft,

d. a front tine including an opening adapted to receive at least one of said front shaft and sleeve, and lug portions including transverse apertures aligned with and disposed outwardly of the transverse aperture of said front shaft and the forwardly disposed transverse apertures of said sleeve,

e. front securing means received by said aligned transverse apertures for connecting said front shaft, rear shaft, and front tine together in removable relation,

f. a rear tine including an opening adapted to receive at least one of said sleeve and drive shaft, and lug portions including transverse apertures aligned with and disposed outwardly of the transverse aperture of said drive shaft and the rearwardly disposed transverse apertures of said sleeve, and

g. rear securing means received by said aligned transverse apertures for connecting said sleeve, drive shaft, and said second tine together in removable relation.

4,142,587

ROTARY CULTIVATORS

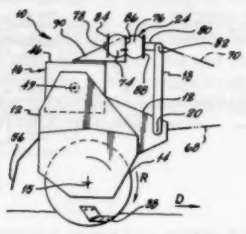
John W. Woodward, Blackburn, and Bruce H. Ashton, Elsternwick, both of Australia, assignors to Massey-Ferguson Services N.V., Curacao, Netherlands Antilles

Filed Sep. 19, 1977, Ser. No. 834,091

Claims priority, application United Kingdom, Sep. 22, 1976, 39228/76

Int. Cl.[2] A01B *33/02*

U.S. Cl. 172—47 **18 Claims**



18. A rotary cultivator characterized by:

a frame;

a rotatable cultivating tool mounted on the frame;

a drive to rotate the cultivating tool, the drive being mounted on the frame;

a reaction member for connection to draught or control means;

a pivotal connection between the frame and the reaction member whereby torque reaction exerted on the frame by the drive during use tends to cause relative pivotal movement of the frame and the reaction member in a given direction; and

resilient means connected between the frame and the reaction member and arranged to resiliently resist said relative pivotal movement in said given direction.

4,142,588

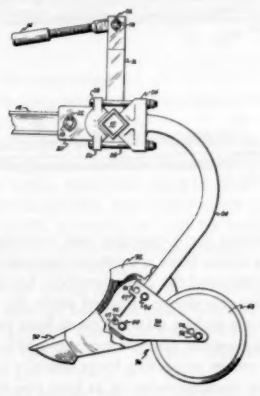
LISTER STABILIZER

Roger A. Doss, O'Donnell, Tex., assignor to P&D Products, Inc., O'Donnell, Tex.

Filed Nov. 21, 1977, Ser. No. 853,256

Int. Cl.[2] A01B *5/00*

U.S. Cl. 172—190 **2 Claims**



1. On a lister for bedding soil having

a. a horizontal, laterally extending frame,

b. draft means connected to the frame for drafting the frame in a direction of draft,

c. a plurality of plowshares,

d. a double moldboard connected to each of the plowshares,

e. a shank connected to each of the plowshares and moldboards, and

f. said shanks depending from said frame,

the improved structure comprising in combination with the above:

g. two triangular plates,

h. said triangular plates forming a stabilizing bracket,

j. one side of the triangle formed by each of said triangular plates being a shank side,

k. the shank side of each of said triangular plates being connected to one of the shanks and extending behind the shank,

m. an angle of the triangle formed by each of said triangular plates opposite the shank side being an axle end,

n. two tabs extending from said shank side of each of said triangular plates,

o. each of said tabs having at least one shank hole therein,

p. said triangular plates having at least one shank hole therein proximate at least one of said tabs,

q. said plates having at least two axle holes therein proximate said axle end, and

r. a stabilizing disc,

s. said stabilizing disc being a flat circular plate,

t. said stabilizing disc being located between the two triangular plates at the axle end.

4,142,589

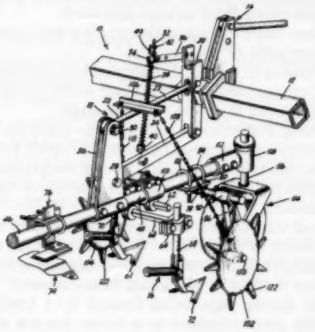
CULTIVATOR DISK SHIELD ASSEMBLY

Alan L. Schlagenhauf, R.R. #3, Bluffton, Ind. 46714

Filed May 16, 1977, Ser. No. 797,456

Int. Cl.[2] A01B *39/26*

U.S. Cl. 172—510 **10 Claims**



1. In a cultivator having a rigid transverse frame member adapted to be connected to a towing vehicle, a linkage connected to said transverse frame member, said linkage comprising first and second generally vertically spaced interconnected arms vertically moveable relative to said frame member, a generally horizontally disposed rig bar assembly connected to said rig bar assembly is vertically moveable relative to said frame member, and a pair of cultivating tools connected to said rig bar assembly, the improvement being a rolling disk shield assembly on said cultivator comprising:

first and second pivot support means connected to said rig bar assembly and extending outward toward opposite side thereof,

a lever independently, pivotally connected to and depending from each said pivot support means for free vertical movement relative to said rig bar assembly,

a single, shielding disk rotatably mounted on each of said levers so as to be independently, vertically moveable relative to said rig bar assembly, said disks being positioned respectively on opposite sides of said rig bar assem-

bly adjacent to respective said cultivating tools with a portion of said disks trailing said tools,

said disks having concave sides facing said tools, and

means for adjusting the lateral positions of said disks relative to said rig bar assembly,

whereby when the cultivator is pulled down a plurality of adjacent plant rows, there is no tangible structure other than said frame member above the respective plant row located laterally adjacent each of said disks.

4,142,590

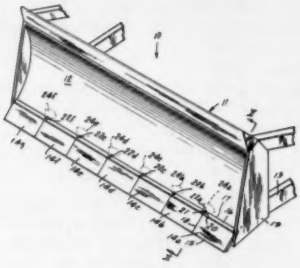
LUBRICATING SYSTEM FOR PLOW BLADES

William R. Watson, Burbank, Ill., assignor to Nalco Chemical Company, Oakbrook, Ill.

Continuation-in-part of Ser. No. 687,984, May 19, 1976, Pat. No. 4,068,725. This application Apr. 8, 1977, Ser. No. 785,833

Int. Cl.[2] A01B *15/00*

U.S. Cl. 172—755 **8 Claims**



1. A lubricating system for plow blades comprising:

(a) a lubricating fluid storage container;

(b) a plow blade having a blade surface and a cutting edge at a lower edge of said surface;

(c) a plurality of tube outlets aligned to expel said lubricating fluid upward and onto said blade surface, said tube outlets being spaced along said cutting edge;

(d) a pump connected to said storage container;

(e) a positive displacement distribution block having an inlet connected to said pump and having outlets each supplying a positive flow of fluid not dependent on back pressure resistance;

(f) a feed tube connecting each tube outlet to said distribution block so that positive flow will continue from each of the tube outlets during working engagement of the blade surface tending to block said tube outlets;

(g) said cutting edge being formed by a lower edge of a cutting plate mounted to a lower portion of said blade surface, an offset being formed between said cutting plate and blade surface, said tube outlets being located along said offset to expel lubricating fluid upward from said offset; and

(h) said cutting plate having notches cut to receive portions of the feed tubes which connect to said tube outlets, said tube outlets being located under and shielded by said cutting plate.

4,142,591

TORQUE-YIELD CONTROL SYSTEM

Sydney Himmelstein, Lake Bluff, Ill., assignor to S. Himmelstein and Company, Elk Grove Village, Ill.

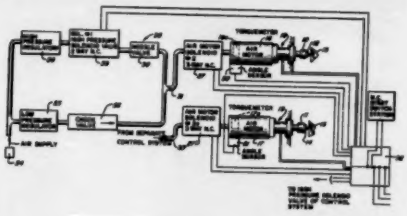
Filed Jun. 29, 1977, Ser. No. 811,988

Int. Cl.[2] G01N *3/22*; B25B *23/14*

U.S. Cl. 173—12 **23 Claims**

1. In a torque-applying apparatus having torque means for forcibly threading a first threaded member sequentially into seated and then set tightened association with a second threaded member, a torque sensor for sensing the amount of torque being applied between said threaded members, and means for sensing a preselected angular amount of threaded rotation therebetween, an improved control for providing a preselected yielded tensioning of said first threaded member in the threaded association thereof with said second threaded member comprising:

torque determining means responsive to said torque sensor and angle sensing means for determining seriatim the incremental increase in torque provided by said torque means corresponding to a preselected incremental angle



of rotation change, said torque determining means being arranged to determine said incremental increase subsequent to seating of the first threaded member relative to the second threaded member; and

means for discontinuing application of torque between said threaded members by said torque means as an incident of a preselected decrease in the determined incremental torque increase sensed by said torque sensor indicating the set condition of said threaded members.

4,142,592

REPAIRABLE ASSEMBLY FOR PROTECTING A CABLE JUNCTION AND METHOD OF ASSEMBLING SAME

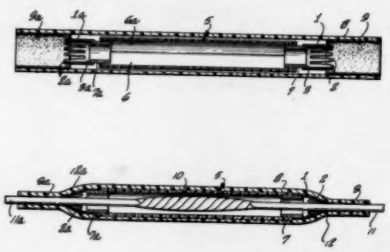
Jacques Brusselmans, Kessel-Lo, Belgium, assignor to N.V. Raychem S.A., Kessel-Lo, Belgium

Continuation of Ser. No. 417,389, Nov. 19, 1973, abandoned. This application Feb. 24, 1975, Ser. No. 552,191

Claims priority, application United Kingdom, May 25, 1973, 25199/73

Int. Cl.[2] H02G *15/18*

U.S. Cl. 174—92 **18 Claims**



16. An assembly for protecting and insulating a junction between cables where there is a substantial diameter difference between the cables and the cable junction, having a split tube and a heat-shrinkable sleeve disposed about the split tube, the sleeve including a sealing material on at least part of its inner wall, the improvement comprising a plurality of relatively flexible prong means projecting longitudinally at spaced intervals beyond the circumference of at least one end of the split tube, the heat-shrinkable sleeve being of length greater than the length of the split tube with said prong means so that, on shrinking, the end regions of the sleeve shrink down over the cables and are sealed thereto.

17. A method of covering a junction between cables where

there is a substantial diameter difference between the cables and the cable junction comprising the steps of:

positioning over the junction an assembly comprising a relatively rigid longitudinally split tube having relatively rigid support means disposed therein and having a plurality of relatively flexible prongs extending longitudinally from the circumference of the ends of the support means; and

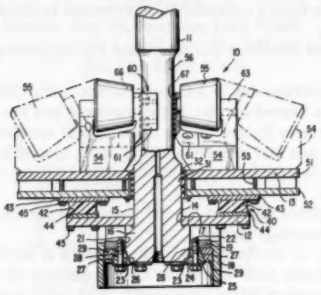
shrinking a heat-shrinkable tube of length greater than the length of the split tube with the support means and prongs, down over the junction surrounded by the split tube, support rings and prongs, at least part of the inner wall of the heat-shrinkable sleeve being provided with a sealing material such that, on shrinking, the end regions of the sleeve that shrink down over the cables are sealed thereto, and the central region of the sleeve that shrinks down over the split tube is not sealed thereto.

4,142,593

RAISE DRILL INNER YOKE BRIDGE

Robert L. Dixon, Brea; Malcolm D. Maxsted, Harbor City, both of Calif., and Jackson M. Kellner, Midland, Tex., assignors to Smith International, Inc., Newport Beach, Calif.

Filed Oct. 25, 1977, Ser. No. 844,694
Int. Cl.[2] E21C *23/00*
U.S. Cl. 175—53 **4 Claims**



1. A raise drill comprising:

a drive stem having means at one end thereof for connecting to a drill string;

a bit body having a plurality of rolling cutter assemblies mounted thereon in a radially spaced relationship, at least two of the cutter assemblies being located inboard of the other cutter assemblies, each roller cutter assembly comprising a saddle mounted on said bit body, said saddle having a pair of yokes extending upwardly for rotatively supporting a rolling cutter,

shock absorbing means interconnected between said drive stem and said bit body for absorbing the impact loads therebetween, said shock absorbing means enabling said bit body to be relatively movable with respect to said drive stem; and

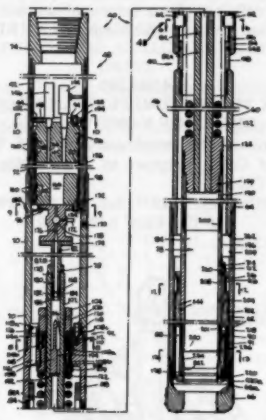
means extending around said drive stem for interconnecting said inboard cutter assemblies and distributing the loads acting thereon, said load distribution means comprising a bridge member having a hollow cylindrical opening slightly larger than the diameter of said drive stem, said bridge member comprising two separable parts.

4,142,594

METHOD AND CORE BARREL APPARATUS FOR OBTAINING AND RETRIEVING SUBTERRANEAN FORMATION SAMPLES

Charles M. Thompson, Carrollton, Tex.; Charles W. Spehrley, White River Junction, Vt., and Charles T. Thompson, Dallas, Tex., assignors to American Coldset Corporation, Addison, Tex.

Filed Jul. 6, 1977, Ser. No. 813,358
Int. Cl.[2] E21B *49/00*
U.S. Cl. 175—59 **40 Claims**



36. A method of obtaining and retrieving a sample of a subterranean formation in a core barrel having a first sample chamber and a second expansible chamber, comprising the steps of:

sealing the second chamber fluid-tight,

lowering the core barrel into a subterranean formation while the second chamber is sealed fluid-tight,

obtaining the sample in the first chamber while the second chamber is sealed fluid-tight and out of communication with the first chamber,

sealing the first chamber with the sample therein,

connecting the first and second chambers into communication with one another to permit fluids of the sample to enter the second chamber,

raising the core barrel to the surface while enabling the second chamber to expand in response to the pressure of fluids of the sample therein as the core barrel is raised to the surface.

4,142,595

SHALE STABILIZING DRILLING FLUID

Duane B. Anderson, Tulsa, and Carl D. Edwards, Vinita, both of Okla., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Continuation-in-part of Ser. No. 776,017, Mar. 9, 1977, abandoned. This application Feb. 13, 1978, Ser. No. 876,976
Int. Cl.[2] C09K *7/02*
U.S. Cl. 175—72 **8 Claims**

1. A clay-free aqueous drilling fluid comprising:

(a) 0.2 to 1.5 pounds per barrel of flaxseed gum;

(b) a predetermined amount of at least 1 salt having a cation selected from the group consisting of potassium and ammonium, said amount providing a cation concentration in said drilling fluid of at least 10,000 ppm; and

(c) a non-clay viscosifier selected from the group consisting of carboxymethyl cellulose, hydroxyethyl cellulose, and hydroxyethyl cellulose plus a heteropolysaccharide produced by the bacterium *Xanthomonus campestris* NRRL B-1459.

6. A well drilling method comprising:

(a) drilling an initial non-shale portion of the well circulating in the well while drilling a non-stabilizing drilling fluid; and

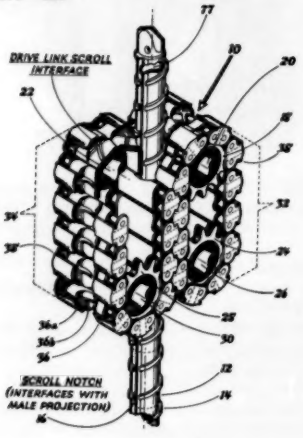
(b) switching to a stabilizing clay-free aqueous-based drilling fluid and continuing drilling with said stabilizing drilling fluid when the shale is encountered, said stabilizing drilling fluid comprising 0.2 to 1.5 pounds per barrel of flaxseed gum, and a predetermined amount of at least 1 salt have a cation selected from the group consisting of potassium and ammonium, said amount providing a cation concentration of at least 10,000 ppm, and a non-clay viscosifer selected from the group consisting of carboxymethyl cellulose, hydroxyethyl cellulose and hydroxyethyl cellulose plus a heteropolysaccharide produced by the bacterium *Xanthomonus campestris* NRRL B-1459.

4,142,596

DRIVE LINK PERMITTING FEED AND ROTATION OF DRILLS OF VARIOUS SIZES

Michael O. Dressel, Englewood, and Horace M. Varner, Littleton, both of Colo., assignors to The Bendix Corporation, Englewood, Colo.

Filed Sep. 9, 1977, Ser. No. 831,729
Int. Cl.[2] E21C *1/02, 5/02*
U.S. Cl. 175—113 **6 Claims**



1. In a drill and drill drive mechanism wherein said drill comprises a drill bit, a shaft with a plurality of helically arranged scroll projections on said shaft and a notch cut axially along the side of said shaft to expose notches between said helical scroll projections,

said drill drive comprises a plurality of sprockets and a pair of chains carried on and driven by said sprockets, said chains being formed of drive links and conventional intermediate links connecting said drive links,

said drive links having concave contact surfaces with tangs extending therefrom mating with said notches between said helical scroll projections, grooves for receiving said helical scroll projections, and linking projections on the outside edges thereof which mate with linking projections on drive links carried on the opposite of said two chains to hold said drive links tightly around and in mesh with said drive shaft;

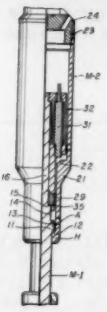
means permitting driving of drill shafts having helical scroll projections between a selected maximum diameter and a selected minimum diameter comprising drive links wherein the contour of said concave surface and the grooves thereon are configured to accept a drill shaft having helical scroll projections of said maximum desired diameter, said tangs are of sufficient length to make substantial contact on the scroll notches of a drill shaft having scroll projections of said minimum diameter, said grooves are of such width that they will receive scroll projections of said maximum desired diameter and those of said minimum diameter, and wherein said axial notch is cut sufficiently deep on any drill shaft used to accommodate the length of said tang.

4,142,597

MECHANICAL DETENT JARS

Russell A. Johnston, Lewisville, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Apr. 8, 1977, Ser. No. 786,059
Int. Cl.[2] E21C *19/00*
U.S. Cl. 175—304 **14 Claims**



1. A jar including,

an inner member,

an outer housing member telescoping said inner member and movable from a collapsed to an extended position relative thereto,

one of said members having means for supporting a well tool,

an anvil surface and a hammer surface with one of said surfaces formed on one of the members and the other of said surfaces formed on the other of said members,

said anvil and said hammer surfaces being spaced from each other when the inner and outer members are in a collapsed position,

means slidably mounted on the inner member and having radial openings therein,

a plurality of latching dogs each of which is movable in a direct radial path within one of the openings of said slidably mounted means, engageable with both members to latch the members in a collapsed position, and

resilient means having its force acting upon said dogs to prevent disengagement of the dogs from one of the members until a sufficient force is applied to one of the members to overcome the force of said resilient means and permit the members to move relative to each other and cause the hammer to strike the anvil.

4,142,598

TWO STAGE LARGE DIAMETER DRILL BIT

Malcolm D. Maxsted, Harbor City, Calif., assignor to Smith International, Inc., Newport Beach, Calif.

Filed May 23, 1977, Ser. No. 799,254
Int. Cl.[2] E21B *9/22*
U.S. Cl. 175—344 **9 Claims**

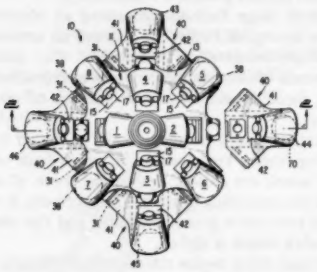
1. A large diameter drill bit comprising:

a primary body having a base plate;

a plurality of cutters rotatively mounted on said base plate, said cutters oriented radially on said base plate with at least two cutters in a radially outermost position to form the primary gage cutters, each primary gage cutter having an upper extent adapted to have rolling contact with a

bore face to form a continuous cutting surface on the bore face;

at least two ear assemblies, each ear assembly detachably connected to said main body base plate between a pair of primary gage cutters, each ear assembly comprising a support frame having at least one cutter rotatively mounted thereon, each ear assembly cutter having an upper extent adapted to have rolling contact with a bore



face to form a cutting surface which is continuous with the cutting surface formed by the primary gage cutters, each ear assembly is mounted in such a manner as to enable the ear assembly cutters to extend outwardly beyond the radial extensions of the primary gage cutters to form a new set of gage cutters of a larger diameter; and

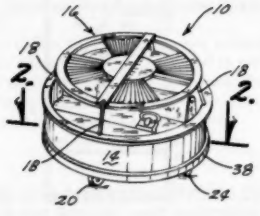
each ear assembly further including a roller stabilizer rotatively mounted on the support frame.

4,142,599

VEHICLE

Robert J. Schmitt, Box 92, Spillville, Iowa 52168

Filed Oct. 3, 1977, Ser. No. 838,740
Int. Cl.[2] B62D *61/04*
U.S. Cl. 180—21 **7 Claims**



1. A vehicle comprising:

a vehicle frame having an ovular shape and having forward and rearward ends and lateral sides;

four wheels rotatably mounted to said frame for supporting said frame for rolling engagement with the ground, said wheels being positioned with one forward wheel adjacent said forward end of said frame, two lateral wheels adjacent said lateral sides of said frame, and one rearward wheel adjacent said rearward end of said frame;

means mounting said forward and rearward wheels to said frame for pivotal steering movement about a vertical axis from a first position wherein said forward and rearward wheels are parallel to said lateral wheels to a second position wherein said forward and rearward wheels are perpendicular to said lateral wheels whereby said vehicle may rotate about a single point when said wheels are in said second position;

a super structure above said vehicle frame forming a passenger compartment, said super structure comprising side walls, a roof, and support members attaching said roof to said side walls in spaced relation thereabove;

bumper means completely surrounding said frame, said bumper means having an inner circumferential surface facing radially inwardly toward the ovular frame around the entire circumference of said frame and an outer circumferential surface presented radially outwardly away from said frame;

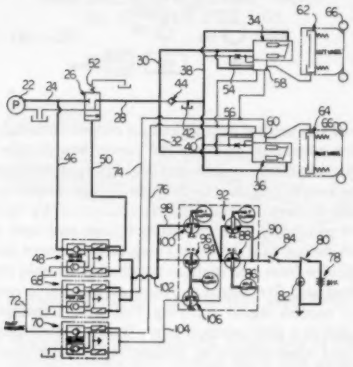
bearing means between said bumper means and said frame for permitting said bumper means to rotate in a circumferential direction around said frame;

4,142,600

CONTROL SYSTEM FOR AUXILIARY FRONT WHEEL DRIVE

John J. Campbell, Decatur, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Mar. 3, 1977, Ser. No. 774,100
Int. Cl.[2] B60K *25/00*
U.S. Cl. 180—44 F **8 Claims**



1. In a vehicle including a plurality of hydraulically operated transmission clutches selectively engageable and disengageable in a pattern to determine various primary drive conditions of the vehicle, a fluid motor drivingly connected to a wheel thereof; a fluid pump and a first conduit means for providing fluid communication between said fluid pump and said fluid motor; wherein said first conduit means includes a valve having a first position blocking communication between said pump and said motor, and a second position providing communication between said pump and said motor; and electrical switch means responsive to fluid pressure applied to at least one of said transmission clutches; and second conduit means for providing communication at least between the electrical switch means and the valve, said electrical switch means for activating said valve to the second position for providing that, upon actuation of at least one of said clutches, said fluid pump drives said fluid motor to drive said wheel.

4,142,601

MOTION PREVENTING DEVICE FOR MOTOR VEHICLES

Takeshi Ochiai, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Jan. 10, 1977, Ser. No. 757,835
Claims priority, application Japan, Jun. 23, 1976, 51-74214
Int. Cl.[2] B60R *25/04*
U.S. Cl. 180—99 **7 Claims**

1. A device for preventing the motion of a motor vehicle comprising:

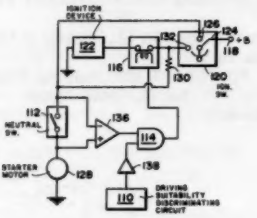
an ignition switch including an ignition terminal, a starter terminal and a movable contact point connected to a power source;

an ignition device connected to said ignition terminal;

a starter motor connected to said starter terminal;

a driver suitability discriminating means for discriminating the suitability of an operator to drive the motor vehicle and generating a first signal corresponding to the suitability;

a neutral switch means for generating a second signal corresponding to what gear position a transmission of said motor vehicle is changed to; said neutral switch means comprising a neutral switch connected with said starter motor for being controlled to turn on only when said transmission is in a neutral gear position, a differential amplifier having two input terminals coupled to the two



sides of the neutral switch and an output terminal, and a resistor connected between the power source side terminal of said neutral switch and said ignition terminal; and

a motion preventing device coupled to said output terminal of said differential amplifier and actuated by both said driver suitability discriminating means and said neutral switch means, said device serving to disconnect said ignition device from said ignition terminal when said device is supplied said first signal showing an unsuitable condition and a second signal showing that said transmission is changed to a gear position other than a neutral gear position, and when otherwise, connecting said ignition device to said ignition terminal.

4,142,602

APPARATUS FOR CONTROLLING THE TRAVELING SPEED OF A MOTOR VEHICLE

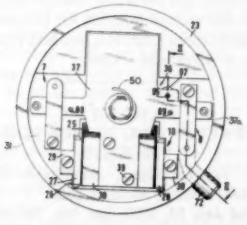
Arnold Mann, Bieber, Fed. Rep. of Germany, assignor to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 4, 1977, Ser. No. 821,720

Claims priority, application Fed. Rep. of Germany, Aug. 14, 1976, 2636745

Int. Cl.[2] B60K *31/00*

U.S. Cl. 180—108 **8 Claims**



1. An apparatus for controlling the traveling speed of a motor vehicle with an electric control unit acted upon by a speed dependent signal, which unit compares the actual traveling speed with a predetermined desired traveling speed and upon a deviation transmits a signal which is dependent on the size of the deviation to a control stage which acts on an element, preferably a throttle valve, which influences the ratio of a fuel-air mixture fed to a motor of the vehicle, comprising

a control stage including a moveable pneumatic actuator means for actuating the element, said actuator means forming a pressure chamber,

two electromagnetically actuatable valve means each defining a passageway operatively connected to said pressure chamber of said actuator means for admitting said pressure chamber of said actuator means with reduced pressure and normal pressure, respectively,

said control stage further comprising an electromagnetic system having an excitation coil and an armature means operatively cooperating therewith,

spring means for biasing said armature means and having a spring force dependent on the position of said actuator means,

said armature means being pivotally mounted for smooth pivoting from a rest position in which both of said two valve means are closed, against the force of said spring means into operating positions, respectively, in which one of said two valve means is opened and the other of said two valve means is closed,

an additional valve means connected to the same said pressure chamber of said actuator means for admitting said pressure chamber of said actuator means with normal pressure when said excitation coil becomes currentless, said additional valve means being formed with a passageway having a cross-section which is larger than that of said passageway of one of said two valve means.

4,142,603

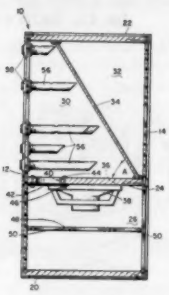
ADJUSTABLE SPEAKER CABINET

Rubein V. Johnson, 2432 Court St., Muskogee, Okla. 74401

Filed Nov. 22, 1976, Ser. No. 743,808

Int. Cl.[2] G10K *13/00;* **H05K** *5/00*

U.S. Cl. 181—148 **7 Claims**



1. A cabinet for improving the sound output of an amplifier, comprising:

an upright housing having a front and a rear;

a horizontal partition dividing the interior of the housing into an upper portion and lower portion, the partition having a speaker opening and a baffle opening therein, the openings being spaced apart from each other, the area of said baffle opening being not more than one-fourth the area of said speaker opening;

a speaker mounted on said horizontal partition and covering said speaker opening therein, the speaker having a vibrational area of preselected size, the speaker being mounted for upward projection of sound through said opening into said housing upper portion, the speaker having means for connecting to the output of an amplifier;

a sounding board positioned within said housing upper portion and inclined at an angle of from about 30° to about 70° relative to said horizontal partition, the sounding board

being inclined from the housing rear upwardly toward the housing front;

a metal baffle affixed to said horizontal partition and covering said baffle plate opening therein; and

a front panel covering the housing upper and lower portions, the upper portion having openings therein for the emission of sound, the area of the openings being at least the vibrational area of said speaker.

4,142,604

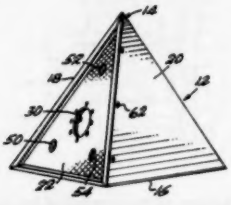
SPEAKER STRUCTURE

Todd G. Smith, 1200 Mariposa Ave., Coral Gables, Fla. 33146

Filed Sep. 15, 1976, Ser. No. 723,577

Int. Cl.[2] H05K *5/00*; A47B *81/06*

U.S. Cl. 181—156 **6 Claims**



1. A speaker comprising:

a tetrahedronal structure having an apex;

an equilateral, triangular base;

three substantially equisized and equilateral triangular planar walls, each wall meeting adjoining walls with an included angle of substantially 120 degrees measured parallel to the base, each wall having an upper vertex meeting at the apex, each wall having a base connected to the triangular base;

a central opening in the center zone of one of the walls, said wall having three ports, each of the ports being aligned from the center of said wall toward the angles thereof and midway between; and

a speaker means mounted in spanning relation to the central opening;

whereby a reflex speaker enclosure entirely comprised of only four planar surfaces is created in which there are no internal surfaces parallel or perpendicular to each other, thus minimizing diffraction effects from internally reflected and overlapping sound waves.

4,142,605

CASTING FOR MUFFLING SOUND CONDUCTED THROUGH SOLIDS AND METHOD FOR ITS PRODUCTION AND ITS USE

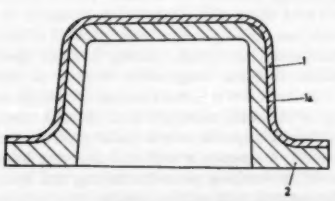
Norbert Bösch, Arbon, Switzerland, assignor to Adolph Saurer Limited, Arbon, Switzerland

Filed Aug. 30, 1977, Ser. No. 829,058

Claims priority, application Switzerland, Sep. 1, 1976, 11058/76

Int. Cl.[2] G10K *11/00*

U.S. Cl. 181—204 **2 Claims**



1. In an internal combustion engine, a sound muffling cover for covering various operating parts of said engine such as for covering the cylinder head, crankcase, oil sump and the like, comprising:

a unitary multi-layer casting including a first casted metal layer;

a second casted metal layer lying atop said first layer;

an oxidation layer intermediate said first and second layers; and

said first and said second layers being separated by said oxidation layer and generally out of metallic contact with one another affording dissipation of sound radiation by said casting as a cover.

4,142,606

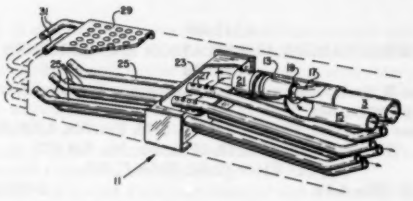
EXHAUST GAS DIFFUSER

Allan J. Vanderzanden, Cornelius, and Max K. Ozawa, Portland, both of Oreg., assignors to Hyster Company, Portland, Oreg.

Filed Oct. 28, 1976, Ser. No. 736,424

Int. Cl.[2] F01N *3/02, 3/06*

U.S. Cl. 181—231 **9 Claims**



1. An exhaust gas diffuser and backfire suppressor comprising:

an air mixing chamber connected to a source of exhaust gas for adding, cooling and diluting air to said gases;

a tube connecting the air mixing chamber to a combination gas diffusion and backfire containing chamber separate from the mixing chamber;

and a plurality of thin, elongate, fire quenching pipes connected to the combination diffusion and backfire containing chamber for directing the gases exiting from said chamber to the atmosphere.

4,142,607

SILENCER, ESPECIALLY FOR PORTABLE MOTOR CHAIN SAWS

Goetz Landwehr, Berglen-Rettersburg; Helmut Lux, Waiblingen, and Karl-Heinz Duemmel, Lossburg, all of Fed. Rep. of Germany, assignors to Firma Andreas Stihl, Waiblingen, Fed. Rep. of Germany

Filed Sep. 23, 1977, Ser. No. 835,886

Claims priority, application Fed. Rep. of Germany, Sep. 25, 1976, 2643240

Int. Cl.[2] F01N *1/14, 7/00*

U.S. Cl. 181—259 **24 Claims**

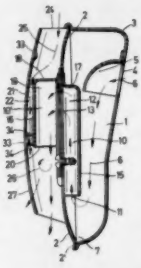
1. An exhaust silencer for portable combustion engines, comprising:

a. a chamber for receiving said engine exhaust, said chamber being defined by a tub-shaped housing having an inlet opening for the exhaust gases, and by a wall member having an opening therein forming an outlet from the chamber;

b. means disposed about the chamber outlet for reducing the kinetic energy of the exhaust gas flowing through the chamber; and

c. a tub-shaped covering hood having at least one inlet for ambient air and an outlet for exhaust gas secured to said

chamber along the exterior surface of said chamber wall member for cooling said wall member, said kinetic energy



reducing means, and said engine exhaust by contact with a stream of ambient air flowing therethrough.

4,142,608

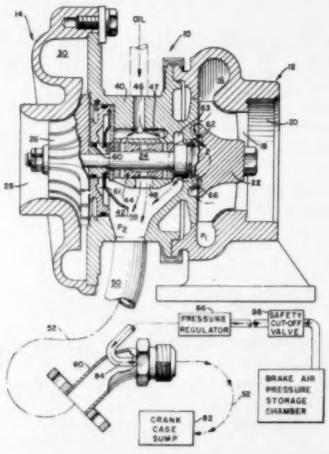
TURBOCHARGER LUBRICATION AND EXHAUST SYSTEM

Charles R. Sarle, Noblesville, Ind., assignor to Wallace Murray Corporation, New York, N.Y.

Division of Ser. No. 594,646, Jul. 10, 1975, Pat. No. 4,009,972. This application Oct. 12, 1976, Ser. No. 730,877

Int. Cl.[2] F16N *39/00*; F04B *17/00*

U.S. Cl. 184—6.11 **3 Claims**



1. A turbocharger system including a turbocharger having a lubrication exit chamber through which lubricating oil passes to discharge after passing through and lubricating rotary elements of the turbocharger, a hydraulic line leading from the lubrication exit chamber to a sump, a source of gas under pressure, the gas being of a higher pressure than the pressure in the hydraulic line, the improvement comprising, a tube inserted into the hydraulic line, the tube bleeding the said gas under pressure to said hydraulic line at a portion thereof intermediate said lubrication exit chamber and said sump, and in a flow direction towards said sump, and in the same direction as the flow of oil from the lubrication exit chamber to the sump, whereby oil is assisted to flow towards the sump, and whereby backward flow of lubricant is inhibited.

4,142,609

ELEVATOR CONTROL SYSTEM

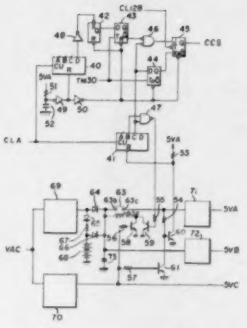
Kenzo Tachino, Inazawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 13, 1977, Ser. No. 860,195

Claims priority, application Japan, Dec. 13, 1976, 51-149512

Int. Cl.[2] B66B *3/02*

U.S. Cl. 187—29 R **4 Claims**



1. In an elevator system to be controlled by a car position signal obtained by detecting relatively an amount of travel of an elevator car by means of a digital position detecting means, an elevator control system comprising; a first power source means; a detecting means for detecting ceasing of said first power source means function due to power stoppage or other power trouble; a car position detecting means including a position signal storing circuit for electrically storing said car position signal representing the car position; second power source means for supplying power source to said car position detecting means to secure its normal operation till the car completely stops after said power stoppage or power trouble; third power source means for supplying power source to only said position signal storing circuit included in said car position detecting means after said second power source means ceases its function; whereby the final position at which the car stops due to its stoppage of power or other power trouble is continuously stored with an accuracy and, after restoration of the power source from the power stoppage or other power troubles, the car may quickly initiate its normal operation.

4,142,610

SELF ADJUSTING HOIST BRAKE

Thomas J. Alexander, Beverly Hills, and Walter Wilson, Westland, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Nov. 14, 1977, Ser. No. 850,989

Int. Cl.[2] F16D *65/56*

U.S. Cl. 188—71.9 **6 Claims**

1. A braking mechanism for use with a hoist mechanism having a driven shaft, said braking mechanism comprising:

a plurality of discs mounted on said shaft and adapted for movement longitudinally along the axis of the shaft and rotationally fixed to said shaft;

a corresponding plurality of annular plates interdigitated between said discs, said plates being mounted on at least two studs having longitudinal axes parallel to and spaced from said shaft, said studs passing through apertures in said plates to allow longitudinal motion of said plates along said studs but prevent rotation of said plates;

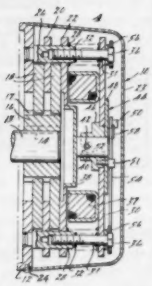
a plurality of threaded members such as bolts supportively passing through apertures in a backing piece, each member coaxially engaging a stud and allowing longitudinal motion of the backing piece therealong and spaced from the plate nearest said backing piece;

first resilient means located between said backing piece and

said studs and operative to bias the backing piece longitudinally away from the ends of said studs;

second resilient means located between said backing piece and nearest plate and operative to bias the nearest plate longitudinally away from said backing piece into frictional engagement with said discs and other plates to stop rotation of the shaft;

moving means mounted to said backing piece for displacing at least one of said plates to a disengaged position against



the force of the second resilient means to allow said shaft to rotate;

means for sensing the separation between said moving means and said plates and thereby the wear on said discs and said plates; and

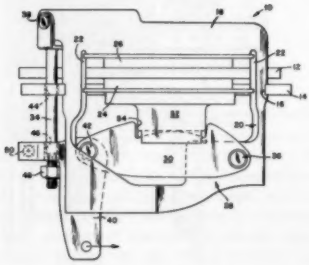
means for incrementally adjusting the distance between said plates and moving means by simultaneously advancing said threaded members into said studs when said separation exceeds a predetermined limit.

4,142,611

DISC BRAKE WITH MECHANICAL ACTUATOR

Donald D. Johannesen, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Aug. 29, 1977, Ser. No. 828,807
Int. Cl.[2] F16D *65/16*
U.S. Cl. 188—72.9 **1 Claim**



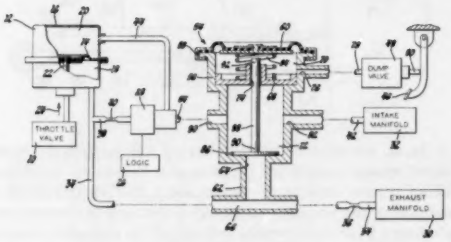
1. In a disc brake having a rotor, a support disposed adjacent one side of the rotor, a frame slidably carried by the support and extending over a portion of the outer periphery of the rotor, and the frame defining a central opening for carrying a pair of friction elements which are engageable with the rotor, the improvement wherein a lever pivotally connects with the frame on one side of the rotor and a link pivotally connects with the frame diagonally on the other side of the rotor, an input member coupled directly only to said lever and said link such that said input member pivots independently of the frame and cooperates with said lever and said link to urge the pair of friction elements into engagement with the rotor, said lever extending from the pivotal connection with the frame through the central opening in order to couple with said input member.

4,142,612

SERVO MOTOR WITH DIFFERENTIAL PRESSURE CONTROLLED AND ACTUATED RELEASE VALVE

John W. Riddel, Fenton, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 21, 1977, Ser. No. 835,239
Int. Cl.[2] B60K *15/00*
U.S. Cl. 192—3 G **2 Claims**



2. In a vehicle road speed control system having a differential pressure operated servomotor and control means for controlling the vehicle engine to control vehicle road speed, first and second sources of pressure at different pressure levels, said first source being vehicle engine vacuum, and means operatively responsive to vehicle brake actuation to inactivate said system, said last named means including a differential pressure operated release valve comprising:

a housing having a vacuum chamber and a release chamber provided therein, and a first wall separating said chambers and having passage means therethrough;

first, second and third ports in said housing opening into said vacuum chamber, said first port being substantially unrestrictedly connected to said first pressure source, said second port being substantially unrestrictedly connected to said control means, said third port being restrictively connected to said second pressure souree and connected to said control means;

a fourth port in said housing opening into said release chamber and being closed when the vehicle brakes are released and being opened to atmosphere when the vehicle brakes are actuated;

a differential pressure responsive movable second wall defining one wall of said release chamber opposite said first wall and having the one side thereof opposite said release chamber exposed to atmosphere, and spring means urging said second wall away from said first wall;

a valve in said vacuum chamber operable to open and close said third port;

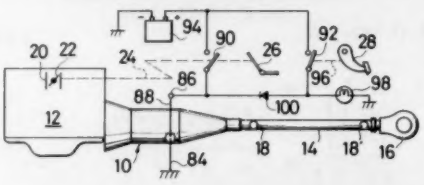
and a movable valve pin extending through said first wall passage means with one end engaging said valve and the other end engageable with said second wall, said passage means permitting restrictive flow therethrough between said vacuum and release chambers;

whereby with said fourth port closed said release chamber is at the same pressure as said vacuum chamber and said second wall acts against said spring means and on said valve pin to hold said valve in a position closing said third port, and upon brake actuation said fourth port is opened to atmosphere so that said release chamber is vented to atmosphere, decreasing the pressure differential acting across said second wall so that said second wall is moved by said spring means to release said valve pin to permit said valve to open said third port, thereby imposing pressure from said first source through said second and third ports to cause only pressure from said first source to be delivered to said control means and to said servomotor, deactivating the system.

4,142,613
DOWNSHIFT CONTROL APPARATUS FOR AUTOMATIC POWER TRANSMISSION

Tetsuya Iijima, Tokyo, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jan. 12, 1977, Ser. No. 758,760
Claims priority, application Japan, Jan. 13, 1976, 51/2440
Int. Cl.[2] B60K *41/04*
U.S. Cl. 192—4 A 13 Claims



1. In an automotive vehicle having engine power output control means capable of producing a kickdown condition, braking means capable of producing a sudden deceleration condition of the vehicle and an automatic power transmission including a hydraulic control system which includes a source of control fluid pressure and at least one transmission gear shift lever having an upshift position and a downshift position, a downshift control apparatus for biasing said shift valve toward the downshift position thereof during a kickdown condition or a sudden deceleration condition of the vehicle, the downshift control apparatus comprising, downshift valve means intervening between said source of the control fluid pressure and said shift valve and having a first condition operative to pass the control fluid pressure therethrough to the shift valve for urging the shift valve toward the downshift position thereof and a second condition operative to discharge the control fluid pressure from the shift valve through the valve means, first biasing means constantly urging the downshift valve means toward the first condition thereof with a substantially constant force, second biasing means responsive to the variation in the power output of the engine for urging said downshift valve means toward the second condition thereof with a force continuously variable with the engine power output, third biasing means operative to urge said downshift valve means toward the second condition thereof when the valve means is out of the first condition thereof, and servo means responsive to a kickdown condition or a sudden deceleration condition of the vehicle for driving, jointly with the force exerted on said valve means by said first biasing means, the downshift valve means out of said second condition into said first condition thereof against the forces exerted on the valve means by said second and third biasing means.

4,142,614
HYDRAULIC TRANSMISSION CONTROL SYSTEM

Kazuyoshi Fujioka, Tokyo, Japan, assignor to Nissan Motor Company, Limited, Japan

Filed Oct. 21, 1976, Ser. No. 734,610
Claims priority, application Japan, Oct. 22, 1975, 50-126443
Int. Cl.[2] B60K *41/26;* F16D *11/06*
U.S. Cl. 192—4 A 7 Claims

1. A hydraulic control system in combination with a motor vehicle including a braking system and a transmission including a hydraulically operated clutch, said hydraulic control system comprising

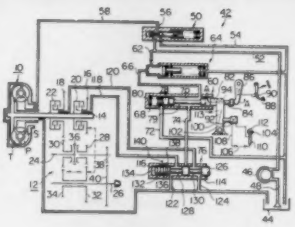
means for producing a pressurized working fluid; the clutch having

means receiving said working fluid;

means defining a passage for supplying said working fluid to said clutch;

a clutch control valve disposed in said passage for controlling supply of said working fluid to said fluid receiving means, said clutch control valve normally assuming a position in which it enables said supply for thereby effecting engagement of the clutch;

first operating means for moving, in response to gear change in the transmission, said clutch control valve into another position in which said clutch control valve inhibits said supply for thereby effecting disengagement of the clutch, said first operating means being connected to a first portion of said clutch control valve; and

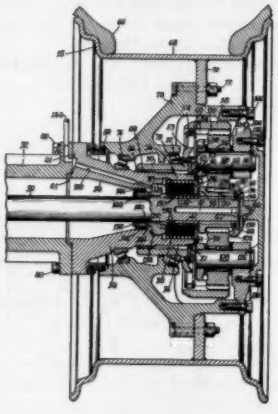


second operating means for moving, in response to application of the brake in the braking system, said clutch control valve into the last named position in which said clutch control valve inhibits said supply for thereby effecting disengagement of the clutch, said second operating means engaging a second portion of said clutch control valve, said second portion being different from said first portion.

4,142,615
WHEEL DRIVE ASSEMBLY

Peter Sidles, Jr., Oswego, and Aleksander Mankowski, Downers Grove, both of Ill. assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Feb. 13, 1976, Ser. No. 657,983
Int. Cl.[2] F16H *57/10;* B60K *17/04, 41/26*
U.S. Cl. 192—4 A 14 Claims



1. In a wheel drive assembly for a vehicle having a rotatably driven shaft, a sun gear affixed to said shaft, a spindle carried by the vehicle and encircling a portion of said shaft, a ring gear fixed on said spindle, a wheel, a hub on said wheel rotatably mounted relative to said spindle, a planetary carrier fixed to said hub, a plurality of planet gears carried on said planetary carrier and engaging between said rotating sun gear and said fixed ring gear for rotating said wheel relative to said vehicle, a piston seated in said spindle and having a sleeve encircling said shaft, said piston and sleeve being axially movable relative to said spindle, a spring extending between said spindle and said sleeve for holding said piston retracted in said spindle, brake disc means carried by said spindle in alignment with said

piston, brake disc means carried by said shaft for rotation with said shaft, said last-named brake disc means interfitting with said first-named brake disc means, means for activating said piston to compress said spring and to lock said first and second-named brake disc means together whereby the rotation of the second-named brake disc means, the shaft and the wheel will be stopped.

10. In a wheel drive assembly for a vehicle having a rotatably driven shaft, a sun gear affixed to said shaft, a non-rotatable spindle mounted on the vehicle and encircling a portion of said shaft, a ring gear fixed on said spindle, a wheel, a hub on said wheel rotatably mounted relative to said spindle, said hub having an axially open end, a planetary carrier removably fixed to the open end of said hub, a plurality of planet gears carried on said planetary carrier and engaging between said sun gear and said ring gear, said planetary carrier and said plurality of planet gears being removable from said hub without removing said wheel and hub from said spindle, non-rotatable brake means splined to said spindle, rotatable brake means splined to said shaft for rotation with said shaft, and means for moving the non-rotating brake means into locking relationship with said rotating brake means whereby the rotation of the shaft and wheel will be stopped, said brake discs being accessible through the open end of the hub when said planetary carrier and planet gears are removed from said hub.

4,142,616

TORQUE-LIMITING DEVICES

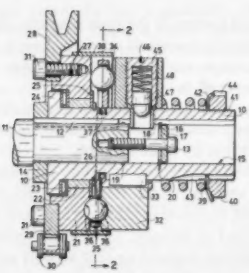
Jean Dekoninck, Vossem, Belgium, assignor to David Brown Sadi S.A., Brussels, Belgium

Filed Feb. 28, 1977, Ser. No. 773,076

Claims priority, application United Kingdom, Mar. 17, 1976, 10648/76

Int. Cl.[2] F16D *43/20*

U.S. Cl. 192—56 R **5 Claims**



1. A torque-limiting device comprising a rotatable drive input member in the form of a hollow sleeve of substantially uniform inner diameter from end to end having means for connecting it to a driving shaft, an output member mounted by bearing means upon and coaxially with said sleeve, a third member coaxially mounted on said sleeve by means that constrains said third and input members to rotate together but provides for axial sliding of said third member along said sleeve, a cage disposed between adjacent axially facing surfaces of said third and output members for retaining a plurality of circumferentially spaced balls, said surfaces being formed with recesses wherein said balls are engageable, resilient means in the form of a coil spring surrounding said sleeve and disposed between said sleeve and said third member for biasing said third member toward said output member whereby to maintain said balls engaged in said recesses during torque transmission through the device, means providing a thrust bearing axially between said output member and said sleeve, said balls being adapted to move out of said recesses to become disposed between non-recessed areas of said surfaces to displace said third member against the force of said spring when the transmitted torque exceeds a predetermined value, and means for holding said third member in displaced position comprising radially open recess means on said sleeve and radially spring biased detent means on said third member for entering said recess means upon predetermined displacement of said third member away from said output member.

4,142,617

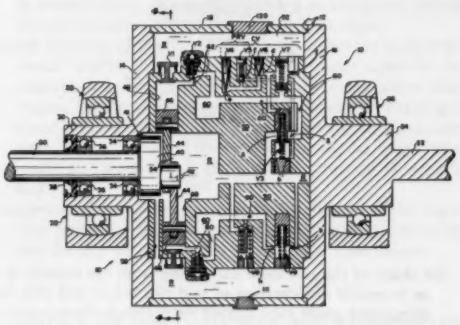
HYDROSTATIC COUPLING

Samuel A. Collier, 1714 S. Olive, Pittsburg, Kans. 66762

Filed Dec. 19, 1977, Ser. No. 861,704

Int. Cl.[2] F16D *31/02*

U.S. Cl. 192—60 **16 Claims**



1. A hydrostatic coupling comprising a drive shaft, adriven shaft aligned with the drive shaft and establishing an internal reservoir into which the drive shaft projects in sealed relationship, radially disposed cylinders interiorly of the casing for rotation bodily therewith, means within the casing establishing a manifold having first and second passages leading therefrom to the reservoir, a crank head on the drive shaft, a piston slidably disposed in each cylinder, a connecting rod extending between an eccentric point on the crank head and each piston, an inflow check valve effective between each cylinder and the reservoir, an outflow check valve effective between each cylinder and the manifold, a volume control valve interposed in said first passage for restricting the flow of fluid through such passage, and a bypass valve interposed in said second passage and normally closing the latter, said bypass valve being effective when the pressure of fluid in the manifold exceeds the pressure of fluid in the reservoir by a predetermined amount to open said latter passage.

4,142,618

RESILIENT SELF-ALIGNING CLUTCH RELEASE BEARING

Georges Fontaine, Alfortville; Francis Regazzoni, Paris; Claude Serville, Clamart, and René Vinel, Bourg-la-Reine, all of France, assignors to SKF Compagnie d'Applications Mechaniques, Clamart, France

Filed Jul. 6, 1976, Ser. No. 702,668

Claims priority, application France, Jul. 8, 1975, 75 21447; Jul. 8, 1975, 75 21451; Jul. 8, 1975, 75 21452

Int. Cl.[2] F16C *33/30*; F16D *23/14*

U.S. Cl. 192—98 **26 Claims**

1. A self-aligning resilient clutch release bearing assembly encircling a tube guide having a cylindrical outer surface and in between a diaphragm and a control element, comprising

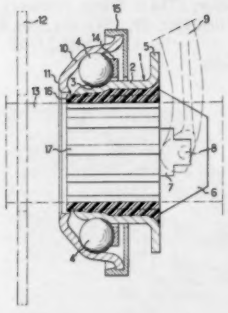
thin-walled inner and outer races,

a plurality of rolling elements in between and bearing on said races,

the outer race having a portion for contact with said diaphragm,

the inner race having means for engagement with said control element, the inner race having an axially extending, generally cylindrical portion with a radially outer surface engaging said rolling elements and an inner surface, and

a sleeve of resilient material secured to said inner surface and covering substantially the entire length thereof, said sleeve having along at least a portion of its inner surface a series of radially inwardly-extending ribs running parallel to the axis of the release bearing and each extending in at the same angle relative to the sleeve and in slidable direct contact with the cylindrical outer surface of said tube guide,



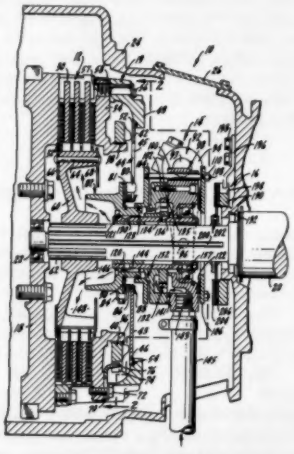
the shape of the ribs each narrowing from the outside in so as to enable deformation of said ribs when said ribs slide along said guide tube during each clutch disengagement operation, both by compression deformation in substantially the radial direction and by flexing deformation in substantially the tangential direction.

4,142,619

DUMP VALVE FOR WET CLUTCH

Romas B. Spokas, Rockford, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Sep. 13, 1976, Ser. No. 722,935
Int. Cl.[2] F16D *13/72*
U.S. Cl. 192—113 B **11 Claims**



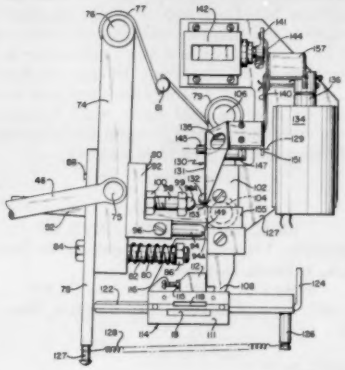
5. A clutch mechanism having an input means and an output means, a plurality of friction elements associated with said input and output means providing a releasable driving connection therebetween, a sleeve rotating with said input means, release mechanism connected to said sleeve, fluid pumping means in said release mechanism, pivotal means connected to said release mechanism and actuatable to move said release mechanism relative to said friction means to release said driving connection, passage means in said release mechanism to conduct fluid from said pumping means to said friction elements to lubricate and cool same, annular valve means in said passage means, said valve means having means defining a fluid passage therethrough in response to movement of said release mechanism in a releasing direction to divert flow through said fluid passage and from said friction elements to prevent drive between said friction elements due to viscous drag.

4,142,620

ACCESS CONTROL SYSTEM

Edward P. Sheehan, Canton, Mass., assignor to Massachusetts Bay Transportation Authority, Boston, Mass.

Filed Oct. 11, 1977, Ser. No. 840,843
Int. Cl.[2] G07F *17/14*
U.S. Cl. 194—78 **25 Claims**



1. An access control system of the type wherein either a coin or identification indicia are used to admit a person through a normally blocked passage, said system comprising:

gating means interposed in said passage;

means for locking said gating means, said locking means permitting limited motion of said locked gating means upon the application of force thereto,

first and second arms disposed to pivot substantially in a common plane about a pair of mutually spaced pivots;

first coupling means connecting said first arm and said gating means and adapted to transmit force therebetween;

second coupling means connecting said second arm and said locking means and adapted to transmit force therebetween;

said coupling means being effective to limit the motion of each of said arms to a pivot angle defined by predetermined start and final positions respectively, said pivot angles being selected such that, for a constant spacing between selected reference points on said arms during motion toward said final position, the mutual arm spacing increases between points positioned radially outward from said reference points and decreases for points positioned radially inward thereof;

coin receiving means adapted to interpose a coin at said start position as a force-transmitting linkage element between said arms;

a first spacer permanently disposed between said arms radially inward of said interposed coin, said first spacer having a length selected to relieve the force on said coin by imposing a first mutual spacing of said arms beyond a predetermined intermediate arm position;

interposer means normally disposed in a retracted position;

means responsive to the recognition of said identification indicia to provide an output signal; and

means responsive to said output signal to move said inter-

poser means to an operative position between said arms radially displaced from said first spacer;

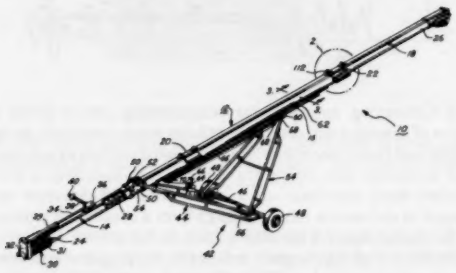
said interposer means being adapted to impose a second mutual spacing of said arms and to transmit force therebetween prior to being relieved by said first spacer;

whereby the force transmitted to said second arm is effective to unlock said gate.

4,142,621
MOBILE AUGER ELEVATOR WITH A FLANGED AUGER TUBE

Norman J. Oliver, Sioux Falls, S. Dak., assignor to Sioux Steel Company, Sioux Falls, S. Dak.

Continuation of Ser. No. 626,121, Oct. 28, 1975, abandoned.
This application Sep. 6, 1977, Ser. No. 830,602
Int. Cl.[2] B65G 71/10
U.S. Cl. 198—318 **9 Claims**



7. An improved auger elevator for conveying grains, granular materials and the like up the relatively steep, lengthy inclines that are encountered during normal usage of the auger elevators, the improved auger elevator comprising:

auger tube means having a generally cylindrical side wall which defines an arc, in a plane transverse to its longitudinal axis, of greater than 180°, which extends from one end of the auger tube means to its other end, and whose inner surface defines a longitudinal flow path for the grains, granular materials and the like being conveyed;

undercarriage means, connected with the auger tube means at at least one point that is disposed between the ends of the auger tube means, for supporting the auger tube means so that the longitudinal axis of the auger tube means is disposed at an angle with respect to the ground and so that one end of the auger tube means is disposed closer to the ground than the other end of the auger tube means;

means for reinforcing and strengthening the auger tube body against bending in a vertical plane, that includes the longitudinal axis of the auger tube means, when the auger tube means is disposed for conveying grains, granular materials and the like up the relatively steep, lengthy inclines that are encountered during normal usage so as to permit the auger elevator to convey the grains, granular materials and the like up lengthier inclines, without top-trussing, than heretofore possible, the reinforcing and strengthening means including: first and second spaced, parallel, vertically disposed, continuous ribs which are integral with the outer surface of the vertically upwardly facing portion of the side wall of the auger tube body, which extends along the outer surface of the vertically upwardly facing portion of the side wall of the auger tube means from the one end of the auger tube means to the other end, which project outwardly, vertically, from the generally cylindrical plane of the side wall of the auger tube means, with respect to the longitudinal axis of the auger tube means, and which define therebetween an elongated aperture, the elongated aperture extending from one end of the auger tube means to the other end and having a circumferential width extending from the first rib to the second rib and being sufficiently small so as not to impair the conveyance of grains, granular materials and the like through the auger tube means even when the auger tube means is disposed at a relatively steep angle with respect to the ground, with the longitudinal side edges of the elongated aperture and the longitudinal axis of the auger tube means defining an angle of substantially 60° and with the longitudinal side edges being disposed so that a vertical plane, including the longitudinal axis of the auger tube means bisects said angle; and cap means, mounted on the first and second ribs and overlying the elongated aperture, for preventing the grains, granular materials and the like being conveyed along the longitudinal flow path from spilling out of the auger tube means through the elongated aperture, the cap means including a generally "U" shaped, in cross-section, cap member having an elongated central portion which overlies the elongated aperture;

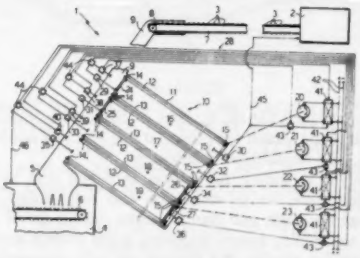
spiral flighting disposed at least in part within the auger tube means and having a diameter substantially equal to the diameter of the cylindrical side wall of the auger tube means, the spiral flighting including means for rotating it about its longitudinal axis for conveying grains, granular materials and the like from one end of the auger tube means to its other end along the longitudinal flow path; and

hopper means disposed adjacent to the one end of the auger tube means for introducing the grains, granular materials and the like to the one end of the auger tube means.

4,142,622
STORAGE UNIT FOR COMPENSATING PRODUCTION IMBALANCES BETWEEN CIGARETTE-MANUFACTURING MACHINES AND A PACKETING MACHINE

Enzo Seragnoli, Bologna, Italy, assignor to G.D. Societa per Azioni, Bologna, Italy

Filed Apr. 7, 1977, Ser. No. 785,688
Claims priority, application Italy, Apr. 12, 1976, 3398 A/76
Int. Cl.[2] B65G 1/12
U.S. Cl. 198—347 **12 Claims**



1. A direct-feed cigarette-package plant comprising:

a cigarette-packaging machine having an inlet spaced from and disposed below a cigarette-making machine;

a downwardly extending duct between said cigarette-making machine and said inlet for delivering a stream of cigarettes to said inlet; and

a storage unit for compensating production imbalances between said cigarette-making machine and said packaging machine, said storage unit comprising:

a prismatic magazine inclined to the horizontal and opening laterally into said duct over at least a portion of the length thereof, said magazine extending downwardly from said duct and lying in a vertical plane,

a plurality of pairs of spaced-apart movable belts having confronting stretches defining respective compartments between them, said compartments being inclined to the horizontal and extending perpendicular to said duct, said compartments being spaced apart along the length of said duct in the direction of travel of said cigarettes

between said cigarette-making machine and said inlet and having a width corresponding substantially to the length of a cigarette made by said cigarette-making machine,

a respective end wall connected to the confronting stretches of each of said pairs of belts for defining the end of each compartment, said end walls being movable with the respective belts to vary the lengths of the respective compartments and thereby vary the respective cigarette-containing capacity thereof,

drive means operatively connected with said belts for displacing same to selectively increase and decrease the cigarette-containing capacities of said compartments, and

control means connected to said drive means and including:

at least one sensor along said duct responsive to the pressure of cigarettes therein, and

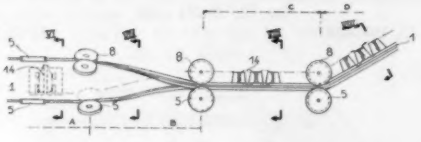
circuit means connected to said sensor and defining first and second threshold values of the pressure of cigarettes in said duct whereby said drive means is operated to increase the capacity of at least one of said chambers upon the detection of a pressure exceeding the first value and to decrease the capacity of at least one of said compartments upon the detection of a cigarette pressure in said duct below said second value which is less than said first value.

4,142,623

CONVEYOR FOR CYLINDRICAL CONTAINERS

Jacques Pradon, St.-Maur-des-Fosses, France, assignor to ERMI, Paris, France

Filed May 16, 1977, Ser. No. 797,315
Claims priority, application France, Jun. 11, 1976, 76 17711
Int. Cl.[2] B65G *47/24, 47/84*
U.S. Cl. 198—410 **4 Claims**



1. An installation for the transfer of containers of generally cylindrical shape which are closed at one end and open at the other end, said installation comprising

a conveyor including an endless traveling belt having a loading zone, flange means on said belt, pulley means engageable with said flange means during travel of the belt, said pulley means including guide pulleys and drive pulleys for guiding and driving the belt, supporting elements attached at regular intervals to said belt, each said supporting element including at least one portion forming a partition extending transversely of said belt and at least one portion forming a bearing for the closed end of a container, said bearing portion extending perpendicular to said belt and parallel to the edges of said belt, said supporting elements on said belt forming a succession of seatings each for receiving a container, which container will be maintained in place when said belt is vertical or is inclined so that the seatings are tilted upwardly,

means for introducing containers onto said seatings on the belt at said loading zone in synchronism with the movement of the conveyor,

an endless retainer belt extending adjacent said conveyor belt over a portion of the path of travel thereof for retaining the containers in said seatings, said endless retainer belt being driven at the same linear speed as said conveyor belt, further pulley means engaging said retainer belt for urging the same against the containers in said seatings on the conveyor belt,

said conveyor belt extending vertically in the position of travel thereof adjacent said retainer belt,

said guide pulleys in the path of travel of said conveyor belt outside the portion adjacent the retainer belt being arranged to tilt said conveyor belt such that the supporting elements are tilted upwardly.

4,142,624

BREAD ACCUMULATOR

James J. Diver, South Holland; Henry A. Heide, Addison, both of Ill., and Basil J. Masse, Carrollton, Tex., assignors to Velten & Pulver, Inc., Chicago Ridge, Ill.

Filed Aug. 29, 1977, Ser. No. 828,881
Int. Cl.[2] B65G *17/24, 47/30*
U.S. Cl. 198—425 **10 Claims**

1. Conveying apparatus for accumulating into a group a series of spaced-apart crushable articles being conveyed along a path and then conveying the accumulated articles as a group, said apparatus comprising conveying means including a low-friction entry conveyor and a low-friction exit conveyer arranged in end-to-end relationship to form a continuous portion of the path to apply a conveying force to the articles for movement thereof along the path, means for stopping said exit conveyor when the lead article in the series reaches a first predetermined point therealong, continued movement of said entry conveyor causing succeeding articles in the series to be moved relative to said exit conveyor therealong and to accumulate behind said lead article to form a contiguous group of articles, means responsive to accumulation of said group of articles to a predetermined second point along said entry conveyor for removing the conveying force applied by said entry conveyor to said accumulated articles between said first and second points thereby to relieve the pressure on said accumulated articles, releasing means for restarting said exit conveyor and reapplying conveying force to a portion of the articles accumulated on said entry conveyor thereby to convey the accumulated articles in a group along the path, and means for reapplying conveying force to the remainder of the accumulated articles for conveying same in a group along the path after the first portion of the accumulated articles has passed said first predetermined point, whereby the series of articles is accumulated into a contiguous group without crushing of individual articles.

4,142,625

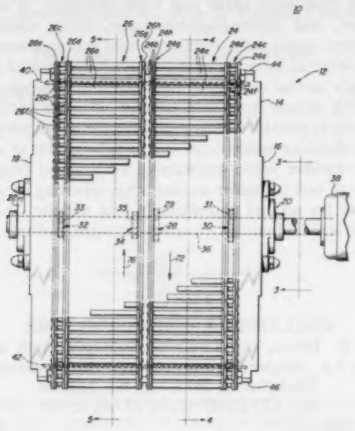
HOLDING CONVEYOR SYSTEM

Ronald D. Bourgeois, 38 Ellison Park, Waltham, Mass. 02154

Filed Dec. 2, 1977, Ser. No. 856,852
Int. Cl.[2] B65G *37/00*
U.S. Cl. 198—570 **3 Claims**

1. A holding conveyor system comprising: a conveyor frame; first and second conveyor belts carried by said frame laterally adjacent each other; a drive shaft rotatably supported by said conveyor frame; first and second drive means for driving said first and second conveyor belts, said belts including a plurality of low-friction article supporting rollers; said first drive means including first drive sprocket means rotatable with said drive shaft and a pinch block above said first drive sprocket means for guiding said first conveyor belt about the top course over said first drive sprocket means which drives said first conveyor belt in a first direction; said second drive means including second drive sprocket means rotatable with said drive shaft and a pair of pinch rollers disposed one on

either side of said second drive sprocket means for guiding said second conveyor belt about the bottom course under said



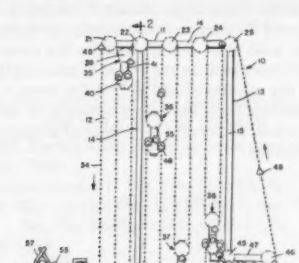
second drive sprocket means which drives said second conveyor belt in a second direction opposite to said first direction.

4,142,626

ACCUMULATOR FOR WOUND PAPER LOGS

John J. Bradley, Green Bay, Wis., assignor to Paper Converting Machine Company, Green Bay, Wis.

Filed Jun. 8, 1977, Ser. No. 804,564
Int. Cl.[2] B65G *17/16*
U.S. Cl. 198—796 **1 Claim**



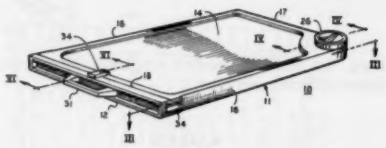
1. A log accumulator comprising:
a frame having an input end and a discharge end,
an upper set of sprockets rotatably mounted on the frame and spaced apart between the input end and the discharge end of the frame,
a lower set of sprockets rotatably mounted on the frame below the upper set and spaced apart between the input end and the discharge end of the frame,
a plurality of independently movable pairs of sprockets, each of said movable pairs comprising an upper sprocket and a lower sprocket connected together for common upward and downward movement between said upper and lower sets of sprockets,
a continuous chain extending downwardly from the upper set of sprockets to the lower set of sprockets at the input end of the frame, then being festooned between the sprockets of said lower set and the lower sprockets of said movable pairs of sprockets, said chain passing directly between two sprockets of said lower set at the discharge end of the frame without passing over a sprocket of one of the movable pairs of sprockets to provide a substantially horizontally extending discharge section of the chain between said two sprockets, said chain then extending upwardly to said upper set of sprockets at the discharge end of said frame, and then being festooned between the sprockets of said upper set and the upper sprockets of said pairs of movable sprockets,
means for rotating at least one of said sprockets for moving said chain around said sprockets, and
a plurality of log carriers mounted on said chain for movement with the chain.

4,142,627

METHOD AND APPARATUS FOR PRESERVING PALETTE PIGMENTS

Alexander Szegi, 3915 Calle Cita, Santa Barbara, Calif. 93110

Filed Jan. 3, 1978, Ser. No. 866,333
Int. Cl.[2] B44D *7/00*; B65D *11/00*
U.S. Cl. 206—1.7 **5 Claims**



1. The combination of:
(a) a watertight container;
(b) an artist's palette disposed inside the container and having a working surface and having oil-based paints exposed on said working surface;
(c) and water disposed in the container and covering the working surface of the palette to exclude air from said paints to thereby prevent drying of the paints.

4,142,628

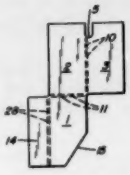
DIRECT DISPENSING SUTURE PACKAGE FOR A MULTIPLE OF STERILE SURGICAL SUTURES WITH OR WITHOUT NEEDLES ATTACHED

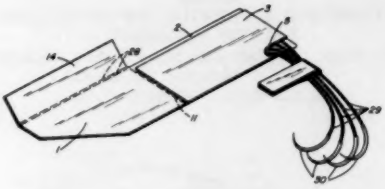
Frank J. Marocco, Eastchester, N.Y., and Lelia A. Bolanowski, Bethel, Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed May 16, 1977, Ser. No. 797,216
Int. Cl.[2] A61L *17/02*
U.S. Cl. 206—63.3 **10 Claims**

1. A direct dispensing multiple needled surgical suture retaining label comprising
a back panel;
a strand cover flap adjacent one side of said panel containing tandem score lines;
a notch on the top portion of said strand flap and adjacent said panel;
a label cover flap adjacent the bottom of said panel containing tandem score lines;
a diagonal cut connecting the bottom and a side portion of said label flap;
a side flap adjacent and connected to said label flap, and opposite said cut, containing tandem score lines;
whereby said strand flap is folded on said tandem score lines onto said panel, multiple needled surgical suture strands held together by a tab are contained between said panel and said strand flap with the tab and the needled ends of said surgical suture strands placed onto said notch, and said label flap is folded on said tandem score lines onto

said strand flap and said said flap is folded on said tandem score lines under said panel such that when said tab is





lifted, the multiple needled surgical sutures are directly dispensed from said label.

4,142,629

DISPOSABLE DENTAL CAPSULE

Joseph G. Biondo, Watchung, and Salvatore L. Savarese, Warren, both of N.J., assignors to Engelhard Minerals & Chemicals Corporation, Iselin, N.J.

Filed Dec. 5, 1977, Ser. No. 857,340
Int. Cl.[2] B65D *81/32*
U.S. Cl. 206—219 **9 Claims**

1. A container for storing and mixing ingredients consisting of:

a first part having an inner, first wall and an outer, second wall, said first wall having a circumferential first wall edge on which first annular sealing means are formed, said first wall defining an inner cavity open at one end and adapted to hold a first ingredient, said second wall having a second wall edge on which second annular sealing means are formed, said second wall being disposed circumferentially outwardly of said first wall and joined thereto to define an annular cavity disposed outwardly of said first wall edge and open at one end, said annular cavity being adapted to hold a second ingredient, said open ends of said first and annular cavities facing in the same direction and said second sealing means being disposed concentrically outwardly of said first sealing means;

a second part having a second part wall defining a second cavity open at one end, said second part further having an annular shoulder means formed thereon;

respective cooperating interengageable means formed, respectively, on said first and second parts and adapted to cooperate with each other to engage said first and second parts with each other whereby said first and second cavities cooperate to form a mixing chamber and said first and second sealing means firmly engage said annular shoulder means to seal said annular cavity and said mixing chamber both from each other and from exteriorly of said container, said interengageable means being releasable by relative rotational movement of said first and second parts to a selected extent whereby said first and second parts are axially moved relative to each other to separate said first sealing means from said annular shoulder means sufficiently to provide a flow path over the entire periphery of said shoulder means from said annular cavity to said mixing chamber while maintaining both sealed from exteriorly of said container so that upon inverting of said container the second ingredient in said annular cavity may flow into said mixing chamber for mixing of said ingredients.

4,142,630

COLLAPSIBLE DISPENSING TUBE

Thomas H. Hayes, and Lewis C. LoMaglio, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed Nov. 7, 1977, Ser. No. 849,084
Int. Cl.[2] B65D *85/14, 85/30, 85/08*
U.S. Cl. 206—277 **8 Claims**

1. A collapsible dispensing container having a laminated tubular body, said laminated tubular body including a metal foil lamination, a layer of a polyolefin on the outside of said metal foil lamination, and, on the inside of said metal foil lamination and on the outside of said polyolefin layer, a layer of a copolymer resulting from the polymerization of 100 parts by weight of (a) at least 50 percent by weight of at least one nitrile having the structure

$$CH_2=\underset{\displaystyle R}{\overset{|}{C}}-CN$$

wherein R is hydrogen, a lower alkyl group having from 1 to 4 carbon atoms, or a halogen, and (b) up to 50 percent by weight based on the combined weight of (a) and (b) of an ester having the structure

$$CH_2=\underset{\displaystyle R_1}{\overset{|}{C}}-COOR_2$$

wherein R_1 is hydrogen, an alkyl group having from 1 to 4 carbon atoms or a halogen, and R_2 is an alkyl group having from 1 to 6 carbon atoms, in the presence of from 1 to 40 parts by weight of (c) a copolymer of a conjugated diene monomer selected from the group consisting of butadiene and isoprene and an olefinically unsaturated nitrile having the structure

$$CH_2=\underset{\displaystyle R}{\overset{|}{C}}-CN$$

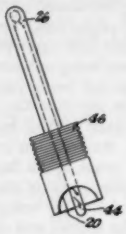
wherein R has the foregoing designation containing from 50 to 95 percent by weight of polymerized conjugated diene and from 50 to 5 percent by weight of polymerized olefinically unsaturated nitrile.

4,142,631

STERILE THERMOMETER SHEATH

Robert C. Brandriff, Box 82, R.D. 2, Pomfret Center, Conn. 06259

Filed May 9, 1977, Ser. No. 794,820
Int. Cl.[2] B65D *85/38*
U.S. Cl. 206—306 **5 Claims**



1. An improved sterile thermometer sheath of the type having a preformed sheath between an upper and a bottom cover layer surrounding an upper and bottom sterile plastic layer which are sealed together to form a sterilizable cover and thermometer sheath, the thermometer sheath having a mouth and a useable portion, wherein the improvement comprises:

said cover fixed to at least a portion of said sheath to prevent separation;

said cover including a weakening means adjacent the closed end of said sheath such that said cover may be withdrawn from adjacent said useable portion of said sheath;

said cover layers connected together to maintain their hollow elongated integrity about said sheath as they are moved along said sheath; and

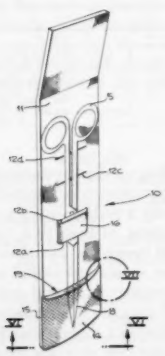
said cover designed to be moved along the length of said useable portion of said sheath toward said mouth to expose said useable portion of said sheath for use.

4,142,632

SURGICAL INSTRUMENT HOLDER AND INSTRUMENT TIP PROTECTOR DEVICE

Dan S. Sandel, Encino, Calif., assignor to Devon Industries, Inc., Northridge, Calif.

Continuation-in-part of Ser. No. 740,863, Nov. 4, 1976, abandoned. This application Aug. 22, 1977, Ser. No. 826,536
Int. Cl.[2] B65D *65/44;* A61B *17/06*
U.S. Cl. 206—363 **2 Claims**



1. A surgical instrument holder and instrument tip protector device comprising:

base means of a sterilizable reticulated material having a substantially fine pore size for receiving a surgical instrument positioned thereon; and

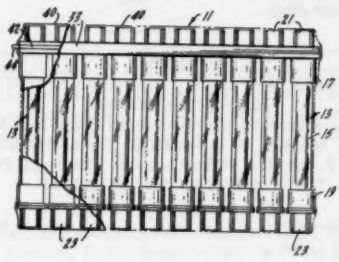
an open ended protective pouch means formed of a sterilizable reticulated foam material having a substantially coarse pore size relative to said base pore size to allow visual inspection therethrough and overlying and peripherally bonded to only a portion of said base, which portion covers a tip only of the instrument, for providing an instrument tip receiving open ended pounch said pouch having an open space therewith into which a tip end of said instrument may be removably positioned while allowing sterilization and visual inspection of said instrument therethrough, and at least one loop on said base aligned with said pouch opening to hold said instrument thereon.

4,142,633

PACKAGING SYSTEM FOR SYRINGE DISPENSERS

Srinivas T. Raghavachari, Chicago, and Robert L. Striebel, II, Evanston, both of Ill., assignors to MPL, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 713,393, Aug. 11, 1976, abandoned. This application Jan. 30, 1978, Ser. No. 873,421
Int. Cl.[2] B65D *85/62*
U.S. Cl. 206—366 **3 Claims**



1. A packaging system for a plurality of syringe dispensers, each dispenser comprising a tubular syringe body having a sealed dispensation orifice at its front end and having a pair of finger-grip flanges projecting radially outwardly from diametrically opposed sides of its back end, each dispenser further including a back end seal through which a medication or the like may be introduced to fill the syringe dispenser, the packaged system comprising:

a pair of narrow, elongated connectors, each connector including two elongated, resilient opposed fingers having their tip ends spaced by a distance slightly smaller than the thickness of the dispenser flanges, each connector gripping the flanges of an aligned row of syringe dispensers to connect the dispensers together in a compact, coherent row package that can be supported in an open rack to enable filling of the individual dispensers without removing them from the package;

and a sealed film cover closely encompassing the entire row package to protect the syringe dispensers against contamination.

4,142,634

LAYER SEPARATOR FOR A CONTAINER

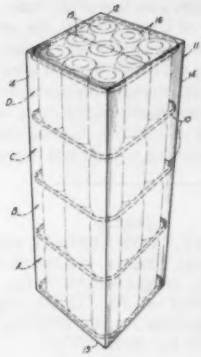
Michael G. Leff, Atlanta, and Ronald W. Cobb, Buford, both of Ga., assignors to Allied Plastics, Inc., Doraville, Ga.

Filed Jan. 30, 1978, Ser. No. 873,229
Int. Cl.[2] B65D *85/676, 85/04, 85/06*
U.S. Cl. 206—392 **11 Claims**

1. A separator for layers of items within a container to form at least first and second layers of same, comprising:

(a) a first section formed of plastic material having an embossed top surface wherein said first section includes an arcuate lip about its outer periphery, said lip including a depending side wall having an inner surface; and

(b) a second section formed of plastic material and being joined to the underside of said first section and having an



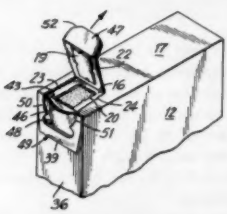
outer edge, said depending side wall extending beyond said outer edge.

4,142,635

RECLOSABLE BOX WITH TEAR-OPEN SPOUT AND BLANK THEREFOR

James L. Capo, Franklin, Ohio, and James Daher, New Kensington, Pa., assignors to International Paper Company, New York, N.Y. and H. J. Heinz Company, Pittsburgh, Pa.

Filed Oct. 19, 1977, Ser. No. 843,484
Int. Cl.[2] B65D *5/54, 5/72*
U.S. Cl. 206—622 **8 Claims**



1. A paperboard box having a top closure adapted to form a tear-open pour spout, the box comprising:

a bottom wall;

two upstanding side walls foldably connected to opposite edges of the bottom wall;

a top closure comprising inwardly folded inner and outer panels adhesively affixed to one another, each of said panels foldably connected to the top edge of a side wall, and the inner panel including a removable portion disposed within perforation slits, such slits being free from adhesive, and the outer panel including a lid portion defined by two opposite spaced perforation slits, a hinge means, and the edge of the outer panel opposite the hinge means and transverse to that fold connecting the outer panel to the side wall, the lid being larger than, overlying and adhesively affixed to the removable portion of the inner panel;

a first end closure comprising an inwardly folded top dust flap, the flap being foldably connected to that edge of the outer panel section of the top closure opposite that edge defining the lid portion thereof; an inwardly folded bottom dust flap, the flap being foldably connected to the edge of the bottom wall opposite the top dust flap; and inwardly folded inner and outer panels, each of these panels being foldably connected to similarly located side edges of each side wall, the inner panel being adhesively affixed to the top and bottom dust flaps, and the outer panel being adhesively affixed to the inner panel; and

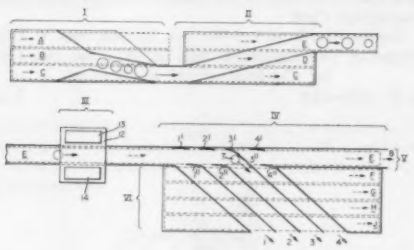
a second end closure comprising an inwardly folded top dust flap, the flap being foldably connected to the inner panel of the top closure along that edge opposite the first end closure; an inwardly folded bottom dust flap, the flap being foldably connected to a similar edge of the bottom wall; inwardly folded inner and outer panels, each of the panels being foldably connected to the other side edges of each side wall, these edges being opposite those foldably connected to the inner and outer panels of the first end closure, the inner panel being adhesively affixed to the top and bottom dust flap and being partially cut out in that portion overlying the top dust flap, and the outer panel being adhesively affixed to the inner panel and being partially cut out in that portion overlying the cut-out portion of the inner panel; and a flap foldably connected to that edge of the outer panel of the top closure defining the lid portion thereof, the flap being adhesively affixed to the outer panel of the second end closure along selected zones thereof and being comprised of a tongue portion, an internal cut-out portion, and an outer tab edge, the tongue portion, not adhesively affixed to the outer panel, being defined by two perforation slits, the cut-out portion and that fold connecting the flap to the outer panel of the top closure, the slits that separate the tongue portion from the outer tab edge extending through the fold and being continuous with the perforated slits defining the lid portion of the top closure, the internal cut-out portion being defined by the free unperforated edge of the tongue portion and the outer tab edge, and the outer tab edge being adhesively affixed to the outer panel of the second end closure.

4,142,636

APPARATUS FOR SORTING CONTAINERS FOR LIQUIDS

Tore Planke, N3180 Nykirke, Norway

Filed Jun. 21, 1977, Ser. No. 808,750
Claims priority, application Norway, Jun. 28, 1976, 762237
Int. Cl.[2] B07C *5/00*
U.S. Cl. 209—524 **18 Claims**



1. Apparatus for sorting containers according to an optically discernible characteristic comprising main conveyor means for carrying containers along a path through a recognition station and to a separating station, at least two exits from said conveyor means, each exit being for containers having assigned characteristics, director means associated with each exit and operable to direct a container from said conveyor means to its associated exit; optical detector means disposed at said recognition station and generating a signal related to the characteristics of a container passing that detector means, a memory unit storing data related to container characteristics, comparator means comparing signals generated by said detector means with data of said memory unit and control means responsive to said comparator for operating selected ones of said director means to direct a container to an appropriate exit, means for retarding containers delivered to said exit from said main conveyor means and wherein said retarding means comprises

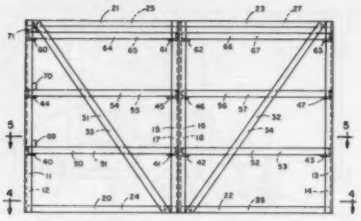
at least two parallel conveyors and means causing containers to move progressively from one of said conveyors to an adjacent conveyor said adjacent conveyor moving at a lesser speed than said one conveyor.

4,142,637

BOAT TRAILER STORAGE RACK

Louis R. Kraiss, 34 Penn Ave., Souderton, Pa. 18964

Filed Jun. 16, 1977, Ser. No. 807,195
Int. Cl.[2] A47F *5/00*
U.S. Cl. 211—182 **1 Claim**



1. A storage rack for boat trailers comprising four upright outside corner posts defining an elongated rectangle in plan outline, the posts being of angle iron having their inner faces facing toward the interior of the rack;

two upright pairs of inside angle iron posts with each pair disposed between the outside corner posts and along the longer side of said elongated rectangle, the angle irons of each pair being affixed in back-to-back relationship with their other backs facing outside of the rack;

top longitudinal tie bars affixed to the inner face, upper ends of the posts and extending from the inside posts to the outside posts;

bottom longitudinal tie bars affixed to the inner face, lower ends of the posts and extending from the inside posts to the outside posts;

transverse angle iron bars affixed to the other inside face of the outside and inside upright posts and extending across the rack, the inner faces of the transverse angle irons facing inwardly of the rack and disposing upwardly facing faces in a substantially common horizontal plane,

track rails resting on said upwardly facing faces of the transverse bars and disposed longitudinally of the rack, the track rails being of narrow width and light in weight so they are readily movable to locations along the tranverse bars to positions to correspond to the wheel track width of trailers,

all of said angle irons being right angles in cross section, and in which an outside transverse bar has an attached block to serve as a hitch rest.

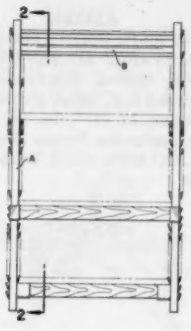
4,142,638

PREFABRICATED STORAGE SHELVES

William R. Vargo, Altanta, Ga., assignor to Husky Storage Systems, Inc., Cleveland, Ohio

Filed May 31, 1977, Ser. No. 801,592
Int. Cl.[2] A47F *5/10*
U.S. Cl. 211—187 **4 Claims**

1. An invertible horizontal beam for selectively supporting shelves of differing thicknesses with the surface of the shelf generally flush with the upper surface of the beam, said beam having walls of generally uniform thickness and in cross section including: a first horizontal wall extending from back to front; a second vertical wall extending downwardly from the front edge of said first wall, a third horizontal wall extending forwardly from the lower edge of said second wall and forming a shelf supporting surface; a fourth wall extending vertically downwardly from the front edge of said third wall, a fifth wall extending horizontally back from the lower edge of said fourth wall, a sixth wall extending vertically downwardly from the back edge of said fifth wall; and, a seventh wall extending horizontally backwardly from the lower edge of said sixth wall, the vertical dimensions of said second and sixth wall being different with the vertical height of one being equal to a standard lumber thickness and the vertical height of the other



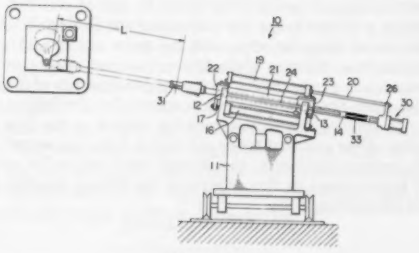
being equal to another standard lumber thickness, both longitudinal ends of both said first and seventh walls having means formed therein adapted to coact with means formed in the walls of vertical posts of a storage rack for supporting said beam, said beam being substantially open-sided at the back thereof.

4,142,639

REMOVAL APPARATUS FOR DIE CASTING MACHINE

Noritoki Ishikawa, Fuchu, Japan, assignor to Ryobi, Ltd., Hiroshima, Japan

Filed Dec. 13, 1976, Ser. No. 750,337
Claims priority, application Japan, Dec. 15, 1975, 50-169666[U]; Dec. 16, 1975, 50-169871[U]; Dec. 17, 1975, 50-170898[U]; Dec. 17, 1975, 50-170899[U]
Int. Cl.[2] B22D *29/00*
U.S. Cl. 414—753 **6 Claims**



1. An apparatus for removing a casting from a die casting machine and carrying it to a desired site, comprising:

(a) a conveyor assembly including a rod member, a gripper connected to the forward end of said rod member for gripping and releasing the casting, and means connected to the rear end of said rod member for opening and closing said gripper;

(b) a driving means,

(c) a movable carriage mounting said driving means and said conveyor assembly, and

(d) said driving means including a plurality of hydraulic cylinder and piston sets connected for operation in a series manner and structurally disposed in parallel with each other and with said rod member for reciprocatingly driving said rod member toward and away from a die casting

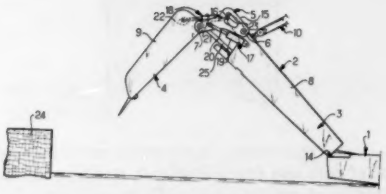
machine, said driving means further comprising a first cylinder and piston set having its cylinder mounted on said movable carriage and a second cylinder and piston set having its cylinder connected to the piston rod of said first set for movement therewith and its piston rod connected to the rear end of said rod member.

4,142,640

DEVICE FOR RETRACTING OR EXTENDING A MOVABLE ACCESS RAMP

Henri Kummerman, Geneva, Switzerland, assignor to MacGregor International S.A., Basel, Switzerland

Filed Dec. 20, 1977, Ser. No. 862,424
Claims priority, application France, Dec. 29, 1976, 76 39424
Int. Cl.[2] B65G *67/58;* B63B *27/14*
U.S. Cl. 414—139 **12 Claims**



1. Apparatus for retracting and extending a movable, vertically pivoting, access ramp adapted to extend between, for example, a vehicle such as a floating vessel and a platform spaced from the vehicle such as a dock, said ramp being hoistable to an inoperative stowed position on the vehicle and lowerable to an operative or working position wherein it partially rests on said platform, the access ramp including at least a first inner ramp section having an inner end hingedly connected to the vehicle, means connected between the vehicle and the first ramp section for hoisting or lowering said section about said hinged connection, and a second outer ramp section pivotable about an inner end thereof for folding downwardly against and lengthwise of said first ramp section, wherein the retracting and extending apparatus comprises at least one intermediate linking member having spaced apart first and second hinge locations; a first hinge pin connecting the linking member at said first hinge location with the outer end of said first ramp section; a second hinge pin connecting the linking member at said second hinge location with the inner end of said second ramp section, the axes of the first and second hinge pins being substantially perpendicular to the longitudinal axis of the ramp; at least one first operating means attached to the linking member for rotating the linking member relative to the first ramp section about said first hinge pin; and at least one second operating means attached to the second ramp section for rotating the second ramp section relative to the linking member about said second hinge pin.

4,142,641

TRANSFER MECHANISM

Nolan Dake, 378 Connaught Way, Houston, Tex. 77015

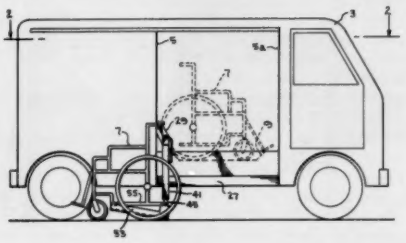
Filed Nov. 8, 1976, Ser. No. 740,135
Int. Cl.[2] B60P *1/54*
U.S. Cl. 414—541 **6 Claims**

1. In a transfer means for moving an incapacitated person from a first seated position on a first seat to a second seated position on a second seat without second-party assistance and while the person remains in a seated posture comprising:

a transfer bar horizontally disposed in front of said seats and structurally affixed proximate an end thereof to a piston-and-cylinder means for moving the transfer bar up or down,

a transfer board means supported on the transfer bar for receiving the weight of a person on his elbows thereon when he is in said first seated position, the transfer board means including arm support means mounted thereon so that the person can shift his weight from the first seated position behind the transfer board to the transfer board itself by resting his arms on the transfer board in engagement with the arm support means and shifting his weight from the first seat to the transfer board means, and then to said second seat, and

drive means operatively associated with the transfer bar and transfer board means for moving the latter along the



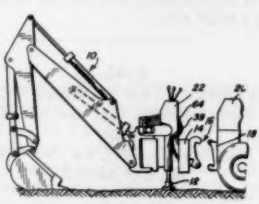
length of the former from adjacent the first seated position of the person to said second seated position of the person while the person is carried thereon, and further including switch means mounted on said transfer board means adjacent said arm support means operable to selectively raise or lower the transfer board means by a relative movement of said piston and cylinder so that the incapacitated person may raise his body after achieving proper positioning on the transfer board means and may lower his body after having moved on the transfer board means along the length of the transfer bar to the said second position.

4,142,642

COUNTERWEIGHT ASSEMBLY FOR EARTH-WORKING EQUIPMENT

Jimmy D. Myers, Morton, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Nov. 14, 1977, Ser. No. 851,004
Int. Cl.[2] E02F *9/18*
U.S. Cl. 414—719 **14 Claims**



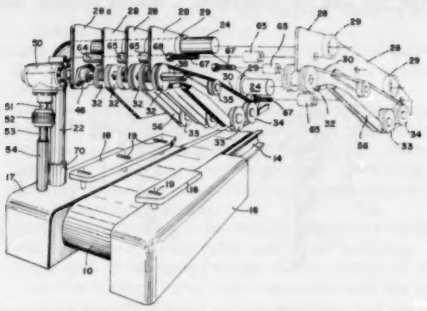
13. In a counterweight adapted to be secured between a tractor and an earth-working implement, the counterweight having a tractor-engaging side and a spaced-apart earth-working implement-engaging side, the improvement comprising:

hydraulic fluid conduits disposed in said counterweight and extending from the tractor-engaging side to the earth-working implement-engaging side for transferring hydraulic fluid between said tractor and said earth-working implement.

4,142,643
BOTTLE CASE UNLOADER

Gene H. Hamrick, Tallmadge, Ohio, assignor to Hamrick Manufacturing & Service, Inc., Mogadore, Ohio

Filed Aug. 8, 1977, Ser. No. 822,680
Int. Cl.[2] B65B *21/18*
U.S. Cl. 414—416 10 Claims

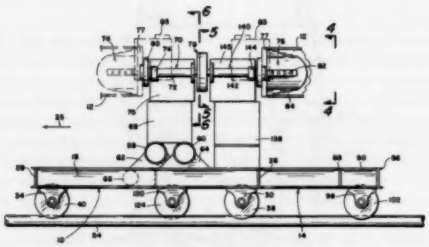


1. In apparatus for unloading bottles from cases moving on a conveyor, the improvement comprising laterally adjustable guides on opposite sides of said conveyor for maintaining the cases in longitudinal alignment, a horizontal support shaft having one end mounted on a vertical post means located proximate said conveyor, said shaft extending laterally over said conveyor and having the other end free and unsupported, individual longitudinally disposed arms one for each row of bottles and laterally adjustably mounted on said shaft, laterally opposed V-belts movably mounted on each side of each arm for progressively engaging a row of bottle necks to carry the bottles, and laterally removable spacers between said arms to longitudinally align each pair of belts with a row of bottles whereby different spacers may be used for different lateral spacings of bottles.

4,142,644
TELESCOPING VEHICLES

Woodrow W. Stoltz, P.O. Box 35103, Tulsa, Okla. 74135

Filed Aug. 1, 1977, Ser. No. 820,581
Int. Cl.[2] B65H *51/00*
U.S. Cl. 414—431 11 Claims

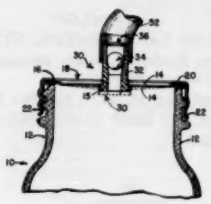


1. Complementary wheeled vehicles for transporting linerally arranged objects, said vehicles comprising main frame means, wheel means journalled on said frame means for moving said vehicles, pedestal means provided for each vehicle, object engaging and supporting means carried by each pedestal and disposed thereon for selective mutual operable engagement between said object engaging and supporting means of one vehicle and the adjacent object engaging and supporting means of the other vehicle, an inboard frame portion provided on the frame means of one of said vehicles and having support wheels journalled thereon for nesting within the frame means and between the wheel means thereon of the other of said vehicles in one relative position therebetween for facilitating the engagement between the said object engaging and supporting means of each pedestal means.

4,142,645
VACUUM SEALING CLOSURE LID FOR HOME CANNING OPERATIONS

Donald G. Walton, 4907 N. Damen Ave., Chicago, Ill. 60625

Filed Apr. 12, 1978, Ser. No. 892,551
Int. Cl.[2] B65D *51/16*
U.S. Cl. 215—260 5 Claims



1. The combination with an open-rimmed vessel such as a jar or the like adapted to contain a perishable foodstuff, of a closure lid seated on the rim of said vessel, means establishing a seal between said lid and the rim coextensively around the latter, said lid being provided with a vent opening therein, a hollow open-ended tubular nipple formed of yieldable elastomeric material and projecting upwardly from said vent opening and establishing communication between the interior of the jar and the ambient atmosphere, the upper end of said nipple being adapted for connection to a source of sub-atmospheric pressure, whereby the jar may be evacuated, said nipple being formed with an internal frusto-conical valve seat of small slant angle, a valve body in the form of a spherical ball disposed wholly within the vertical confines of the nipple, normally resting loosely, and bearing to a large extent circumferentially against said seat in sealing relationship, whereby the ball will deform the seat and come to rest thereon at different elevations when different degrees of sub-atmospheric pressure are maintained within the vessel, said seat being disposed in a medial region of the nipple, whereby inward pressure which is applied to the nipple at a level below the valve will deform the valve seat, at least partially unseat the ball, and permit air to flow downwardly through the nipple and around the opposite sides of the ball to thus relieve the sub-atmospheric pressure within the jar, and retaining means adjacent the upper end of the nipple for preventing the ball from escaping from the nipple under the influence of air which is drawn upwardly through the nipple, or during handling of the jar lid.

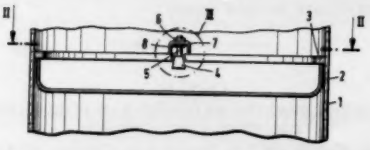
4,142,646
DEVICE FOR THE METALLIC SEALING OF AN INTERMEDIATE PARTITION ON A VESSEL

Wolfgang Wienpahl, Bochum, Fed. Rep. of Germany, assignor to Balcke-Durr Aktiengesellschaft, Ratingen, Fed. Rep. of Germany

Filed Jan. 23, 1978, Ser. No. 871,129
Claims priority, application Fed. Rep. of Germany, Feb. 24, 1977, 2707916
Int. Cl.[2] B65D *1/24, 1/36*
U.S. Cl. 220—22 10 Claims

1. In a cylindrical vessel having an intermediate partition attached to the inner surface of a wall of said vessel, said intermediate partition including a sealing ring attached therein, the improvement comprising

said sealing ring in at least two parts being separated by a space,



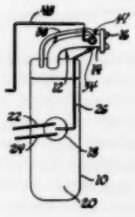
wedge means, respectively, located at said space to expand the sealing ring towards said surface of said vessel.

4,142,647

FUEL TANK VENTING SYSTEM

Leslie K. Walters, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 15, 1977, Ser. No. 860,956
Int. Cl.[2] B65D *25/00*; F16K *24/04*
U.S. Cl. 220—85.8 **2 Claims**



1. A fuel tank venting apparatus for a fuel tank including a tank body having a domed upper surface defining a vapor space above the level of liquid fuel in the tank body and a filler neck extending upward from the tank body and having an open end and a fuel nozzle restrictor means recessed in and extending thereacross next adjacent the open end, the open end of the filler neck being adapted to be closed by a removable filler cap, said venting apparatus including a vapor conduit means connected in flow communication at one end with the vapor space in the tank body adjacent the domed upper surface and at its opposite end to a side of the filler neck next adjacent to the fuel nozzle restrictor means and between the fuel nozzle restrictor means and the fuel tank, aperture means in the upper end of the filler neck defining an orifice for venting fuel vapor from the upper portion of the filler neck adjacent to said fuel nozzle restrictor, conduit housing means operatively connected in flow communication with said aperture means and having an outlet end adapted to be connected to a vapor storage canister, a liquid check valve means supported in said conduit housing means to prevent liquid flow through said conduit housing means, and a filler limiter vent conduit connected at an end to said tank body and connected at its other end to the side of the filler neck opposite said vapor conduit means connection to the filler neck.

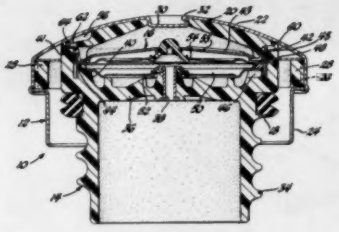
4,142,648

CAP ASSEMBLY FOR A FUEL TANK

Lawrence P. Johnson, Huron, and William C. Vogel, Sandusky, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 19, 1978, Ser. No. 916,764
Int. Cl.[2] B65D *51/16*
U.S. Cl. 220—203 **1 Claim**

1. A cap assembly for closing a fuel tank, said cap assembly comprising; a threaded member having a cylindrical portion having a substantially closed end, an open end, an inner wall between said ends, and an end wall at said open end; a cap member for covering said cylindrical portion having a dome-shaped portion enclosing said cylindrical portion; an impact resistant cap support having a dome-shaped portion abutting the dome-shaped portion of said cap member for support of same, a rim portion supported on the end wall of said cylindrical portion and a plurality of radially extending resilient fingers formed within said rim portion and abutting said end wall to urge said cap support toward said cap member, valve means disposed within said cylindrical portion and communicating with the fuel tank for maintaining a desired pressure range



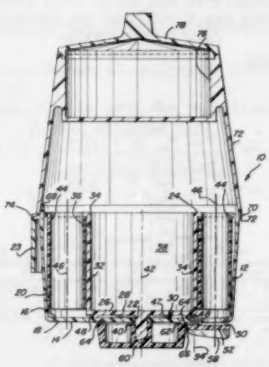
within the fuel tank; and vacuum relief slot means for communicating said fuel tank with atmosphere through said valve means when a predetermined vacuum is present in said fuel tank comprising, a plurality of radial slots formed in the substantially closed end of said cylindrical portion communicating with said valve means and a plurality of axially extending slots formed in the inner wall of said cylindrical portion communicating with said radial slots and with atmosphere through said cap support.

4,142,649

DISPENSING APPARATUS FOR TAMPONS

James F. Forgey, Houston, Tex., assignor to Seth Pomeroy, Denver, Colo.

Continuation of Ser. No. 746,481, Dec. 1, 1976, abandoned. This application Feb. 9, 1978, Ser. No. 876,230
Int. Cl.[2] B65D *83/02*
U.S. Cl. 221—82 **3 Claims**



1. A dispenser for sequentially dispensing cylindrical elongate tampons, said dispenser comprising:

a housing having a circular bottom wall with a delivery opening therein, and a side wall extending upwardly from the peripheral edge of said bottom wall and having a cylindrical cross-section;

a carrousel rotatably mounted within said housing, said carrousel including:

a cylindrical magazine having a circular base plate and a cylindrical side wall extending upwardly from said base

plate to form a central storage area within said magazine for storing a supply of the tampons;

a plurality of dispensing tubes attached to and spaced around the outside of said side wall of said magazine, each of said tubes having an open top and an open bottom and being dimensioned to receive one of the tampons in an upright position, the bottom of each of saib tubes becoming selectively aligned with said delivery opening upon rotation of said carrousel within said housing so that the tampons within said tubes are selectively dispensed through said delivery opening in said bottom wall of said housing;

means exterior to said housing connected to said carrousel for rotating said carrousel to bring said tubes selectively into alignment with said delivery opening;

a hatch connected to said bottom wall of said housing and movable between a first position covering said delivery opening to prevent discharge of said tampons from said dispensing tubes, and a second position uncovering said delivery opening to permit discharge of said tampon from said dispensing tubes; and

a cover for said housing to protect the tampons in the magazine and the dispensing tubes, said cover including:

a side wall of substantial height and of cylindrical cross-section having a lower edge engageable with the upper edges of said side wall of said housing;

a receptacle formed within said side wall of said cover for containing powder or other toiletries; and

a lid on said receptacle forming a top for said cover.

4,142,650

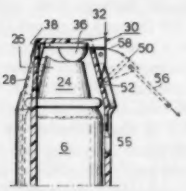
AEROSOL DISPENSER PARTICULARLY USEFUL AS A POCKET FIRE EXTINGUISHER

Albert A. Almouli, 24 Lipski St., Tel Aviv, Israel

Continuation of Ser. No. 691,983, Jun. 2, 1976, abandoned. This application Aug. 17, 1977, Ser. No. 825,396

Int. Cl.[2] B67D *5/52*

U.S. Cl. 222—135 **5 Claims**



1. An aerosol dispenser, comprising: a housing including side, bottom and top walls defining an internal compartment and having a plurality of outlet openings in a side wall oriented in the same direction laterally of the housing; a plurality of aerosol containers disposed within the internal compartment of the housing in side-by-side relationship; each aerosol container including a depressible valve member within the housing and a dispensing nozzle aligned with one of said housing outlet openings through which the contents of the container are dispensed upon depression of the respective valve member; and a movable dispenser operator pivotable at the top of the housing and including a single depressible element externally of the housing and a plurality of actuating elements internally of the housing each engagable with the valve member of one of the aerosol containers, all said internal actuating elements being actuated by said single external manipulatable element to depress all the valve members simultaneously upon depression of the depressible element; said housing further including a blocking element located to block the depression of the single depressible element, said blocking element being integrally formed with the housing and being jointed by a weakened juncture to a portion of its wall underlying said depressible element so that the forceful removal of the blocking element provides a recess in the housing wall permitting the depression of the depressible element of the dispenser operator.

4,142,651

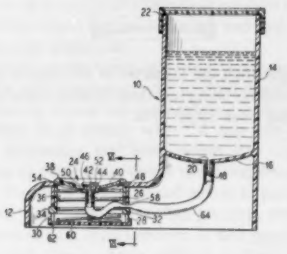
FLUID DISPENSER WITH FLEXIBLE OUTLET TUBE AND PINCHING VALVE

Norbert Leopoldi, 4180 Marine Dr., Chicago, Ill. 60613, and Leland K. Girard, 693 Madelyn Dr., Des Plaines, Ill. 60016

Filed Apr. 29, 1977, Ser. No. 792,319

Int. Cl.[2] B67D *3/00;* **F16K** *7/06*

U.S. Cl. 222—185 **6 Claims**



1. A fluid dispenser comprising: a base portion and a container portion integrally formed therewith; a pushbutton valve including a pushbutton which is slidably and reciprocally retained within a cavity formed in said base portion; said pushbutton and said cavity each having side walls, said side wall of said cavity having at least a pair of elongated slots formed in it and said side wall of said pushbutton having a pair of locking lugs formed on it which lockingly engage within said elongated slots to secure said pushbutton within said cavity; said pushbutton having a top wall which is concave and a projection beneath said top wall; said container portion having a bottom wall disposed at a level higher than said top wall of said pushbutton, a projection beneath said bottom wall and a flexible tube for conveying fluid by gravity flow from said container portion to said pushbutton coupled to said projection beneath said bottom wall of said container portion and said top wall of said pushbutton; an orifice extending through said projection beneath said top wall of said pushbutton, whereby a fluid is conveyed to the top wall of said pushbutton; said flexible tube extending through aligned openings in said side walls of said cavity and said pushbutton, said pushbutton being biased so that said openings are misaligned and the edges of said openings pinch said flexible tube closed to prevent fluid flow through said flexible tube, and being operable to substantially align said openings to release said flexible tube to permit fluid flow therethrough to the top wall of said pushbutton.

4,142,652

AEROSOL METERING

Norman E. Platt, Randolph, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.

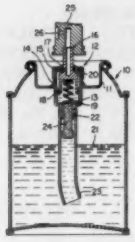
Filed Sep. 2, 1977, Ser. No. 830,373

Int. Cl.[2] B65D *83/14*

U.S. Cl. 222—189 **3 Claims**

1. A metering valve for intermittently discharging a substantially uniform quantity of an aerosol composition from a container where it is maintained under pressure, comprising, in combination, a valve housing terminating at its lower end in a tailpiece, a valve stem provided with an orifice seated for movement in said housing so that said orifice connects the valve housing with the outside of said container through the valve stem when said valve stem is unseated, a spring normally biasing said valve stem in closed position, and a plug formed of polymeric material porous to said aerosol composition closing the tailpiece of said valve, the material of said plug having a

density of at least 0.912 g/cc that includes a network of interconnected pores throughout its volume with no straight paths



therein longer than the diameter of the largest pore, the average pore diameter being less than 10 micrometers with the pore volume being from 10 to 50%.

4,142,653

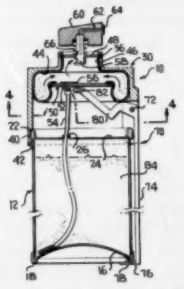
FLEXIBLE BAG PUMP-TYPE DISPENSER FOR MOUNTING ON CANS

Carmen T. Mascia, Clarendon Hills, and Gary K. Hasegawa, Chicago, both of Ill., assignors to The Continental Group, Inc., New York, N.Y.

Filed Sep. 21, 1977, Ser. No. 835,345

Int. Cl.[2] B05B *9/043, 11/04;* **G01F** *11/03*

U.S. Cl. 222—207 **9 Claims**



1. A dispensing device for dispensing the contents of containers of the can type having an end unit secured to a body by an upper chime, said dispensing device comprising a housing having attachment means for engaging a container upper chime, a variable volume enclosure carried by said housing, an inlet tube and inlet valve connected to said enclosure for communicating said enclosure with the interior of an associated container when the volume of said enclosure increased, a separately controlled dispensing valve and nozzle unit connected to said enclosure for selectively dispensing a product drawn into the enclosure and placed under pressure therein independently of the pressurizing of a product within said enclosure, and an actuator carried by said housing and coupled to said enclosure for varying the volume of said enclosure to selectively draw in a product and pressurize a drawn in product, said enclosure being in the form of a flexible bag having an upper end fixed relative to said housing and a movable bottom wall for varying the volume of said enclosure.

4,142,654

ADJUSTABLE STROKE HAND OPERATED LIQUID DISPENSER

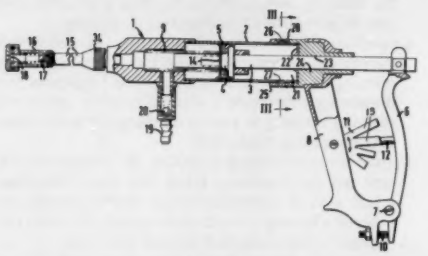
Ian E. Doubleday, Sheffield, England, and Ronald H. D. F. Lee, deceased, late of Berkhamsted, England (by Stephen R. H. Lee, executor), assignors to Burroughs Wellcome Co., Research Triangle Park, N.C.

Filed Mar. 2, 1977, Ser. No. 773,670

Claims priority, application United Kingdom, Mar. 2, 1976, 8308/76

Int. Cl.[2] G01F *11/06*

U.S. Cl. 222—309 **4 Claims**



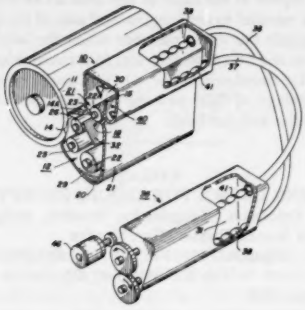
1. In a liquid dispensing device, a tubular barrel defining a chamber, a removably attached nozzle means at one end and a removably attached body part at the other end, said nozzle means containing a stepped bore of two diameters defining a shoulder, the portion of the bore of larger diameter opening into the chamber and in conjunction with the shoulder providing axial and lateral supporting surfaces and the portion of the bore of smaller diameter being internally threaded, said nozzle means further comprising a nozzle provided with a threaded nipple screwed into the threaded smaller bore, said body part containing a through bore of one diameter, a piston rod slidably mounted in the through bore with one end extending outwardly from the through bore and the other end inwardly into the chamber, a piston assembly mounted to the inner end of the piston rod comprising back-to-back, flexible, cup-shaped washers having conical circumferential flanges which diverge from their back-to-back sides, said piston assembly being longitudinally movable in the chamber by reciprocation of the piston rod, an extension extending from the piston rod at the forward side of the piston assembly, a flat surface disposed at the base of the extension against the forwardly-facing, cup-shaped washer of such diameter as to have engagement with the inner side of the flange thereof, said flat surface constituting a supporting surface, a spring mounted in the chamber with one end seated within and against said end and side surface supports in the nozzle means and with its other end seated against said supporting surface provided by the flat surface, said spring yieldably urging the piston assembly rearwardly in the chamber, a handle fixed to the body part, a lever pivotally mounted near one end to the distal end of the handle, means pivotally connecting the other end of the lever to the protruding end of the piston rod such that pivotal movement of the lever about its pivot will effect reciprocation of the rod, said nozzle means containing a valve inlet in communication with the larger diameter portion of the bore through which fluid is drawn into the chamber during retraction of the piston, said valve inlet preventing reverse flow of fluid, said tubular body containing at its rear end peripherally-disposed holes a plane disposed about the barrel defining a annular cavity about the barrel with which the holes are in communication for receiving fluid which escapes from the forward side of the piston to the rear side, said sleeve containing a drainage port and a check valve mounted to the sleeve and in communication therewith arranged to permit the entrance of air into the annular cavity on the forward stroke of the piston.

4,142,655

TONER DISPENSING AND SUPPLY ARRANGEMENT

Joseph Fantuzzo, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 31, 1977, Ser. No. 802,164
Int. Cl.[2] G03G *15/08*
U.S. Cl. 222—318 **2 Claims**



1. A toner dispensing and resupply arrangement for dispensing toner to a development system of a xerographic machine, comprising

a toner dispenser including a hopper formed into two toner reservoirs, one of said reservoirs including an opening and means for dispensing toner through said opening into said development system,

a remote toner container,

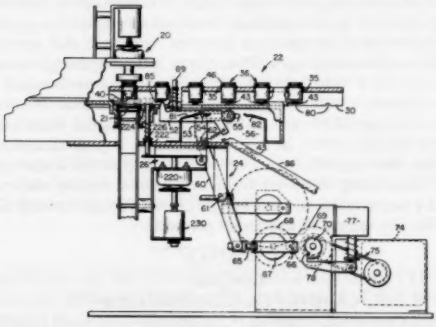
a first auger transport for continuously delivering toner to said one toner reservoir from said container at a rate in excess of the rate at which toner is dispensed into said development system to thereby create a toner overflow, said other reservoir arranged to accept said overflow and a second auger transport in said other reservoir to return said overflow to said container.

4,142,656

DROP FORMER UTILIZING GAS PRESSURE

Michael R. Smith, and James E. Ferris, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 17, 1976, Ser. No. 752,217
Int. Cl.[2] B01L *3/00*; B65D *83/14*
U.S. Cl. 222—325 **11 Claims**



1. A metering device for use with a chemical analyzer in which fluid is dispensed from a sample cup removably supported adjacent said device in a metering position, said cup being provided on a bottom wall thereof with a dispensing tip suitable for the formation of a pendant drop, said tip having an aperture therein permitting forced fluid flow from a compartment in the cup, the maximum dimension of the aperture being sufficiently small to prevent flow of the fluid under gravity, said cup further comprising a top cap having an opening therein in fluid communication with said compartment, said device comprising:

head means adapted to be sealingly engaged with the top cap, said head means including a passageway having a discharge port for supplying fluid pressure to said cup;

means for receiving a plurality of sample cups and for successively supporting each of said cups in the metering position with the top cap spaced from said head means, said receiving and supporting means being adapted to precisely locate a cup in the metering position relative to said head means such that said opening and said discharge port are in axial alignment;

means for selectively engaging said head means with the top cap to place said discharge port in fluid communication with the opening in said top cap, said means for selectively engaging said head means with the top cap including means for advancing said head means into engagement with the top cap when the cup is in the metering position and means for retracting the head means to permit a new cup to be moved into the metering position; and

means for generating a fluid pressure in said passageway in an amount sufficiently above ambient to form a pendant drop on said tip.

11. A sample cup for the storage and dispensing of fluids, said cup comprising:

a side wall and a bottom wall which together define a compartment having a fluid capacity sufficient to permit at least one drop to be dispensed therefrom, said bottom wall having a dispensing tip formed thereon, said tip having a platform on an outer surface which includes an aperture therein in fluid cmmunication with said compartment, said platform surrounding said aperture and defining a drop-wettable area which will support a pendant drop, the maximum dimension of said aperture being sufficiently small to prevent flow of the fluid under gravity;

a removable top cap on said cup, said top cap having a hole therein fluid communication with said compartment and in axial alignment with said aperture, the diameter of said hole being generally equal to the diameter of said platform, said top cap having a generally flat surface adapted to sealingly engage a metering head; and

a bottom cap which covers said aperture, said bottom cap being removably attached to said cup adjacent said bottom wall.

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DISPENSING CLOSURE WITH NONRIGID FOLLOWER

Ronald L. Wanke, 1920 N. Clark St., Apt. 13A, Chicago, Ill. 60614

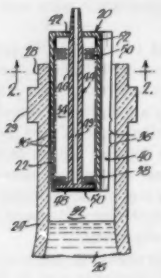
Continuation-in-part of Ser. No. 556,945, Mar. 10, 1975, abandoned. This application May 16, 1977, Ser. No. 797,183
Int. Cl.[2] B65D *51/16*
U.S. Cl. 222—386.5 **13 Claims**

1. A dispensing closure for liquid containing containers having necks of different diameters, comprising:

a cap having an annular skirt which surrounds an open chamber, the cross section of the annular skirt being generally circular for a majority of the periphery and indented for the remaining portion of the periphery to form a pouring spout extending along the sides of the annular skirt, a vent aperture extending through the cap to vent the open chamber to exterior air, the annular skirt being distortable in cross section when inserted into container necks of different diameters for maintaining the cross section in frictional engagement against the container neck to retain the cap therein, and

a nonrigid bag having a single opening mouth secured to the cap so that the interior of the bag is contiguous with the

open chamber, the bag when collapsed being housed substantially entirely within the annular skirt and inflated



by air entering the vent aperture as liquid is dispensed through the spout.

4,142,658

CLOSURE UNIT FOR BEER KEGS

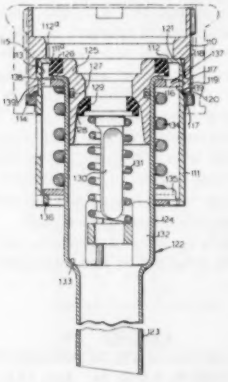
Cyril G. Golding, Sedgeley, England, assignor to GKN Sankey Limited, Bilston, England

Continuation-in-part of Ser. No. 780,798, Mar. 24, 1977. This application Aug. 9, 1977, Ser. No. 823,066

Claims priority, application United Kingdom, Aug. 20, 1976, 34777/76; Aug. 20, 1976, 34778/76; Dec. 4, 1976, 50660/76; May 7, 1977, 19251/77

Int. Cl.[2] B65D *83/00;* **F37L** *37/18*

U.S. Cl. 222—400.7 **16 Claims**



1. A closure unit for a container, the closure unit comprising:

a bush for reception in an opening in the container, the bush comprising a first, annular, metal part which has, in one end, a counterbore;

a second part in the form of a stainless steel tubular member held permanently and firmly in the counterbore and extending outwardly therefrom;

a valve seat on the bush;

a downtube supported by the bush for extending into the container;

spring-loaded valve means within the bush and associated with the downtube and said valve seat; and

the valve means comprising a member of resilient material mounted adjacent to one end of the downtube and having a convergent sealing surface for engagement with said valve seat on the bush; and wherein said seat is provided by the inner periphery of an internal flange on the second bush part so as to provide substantially a line seal between the flange and said member of resilient material, the surface of the flange between said inner periphery thereof and the part of the bore of the second bush part which surrounds the downtube being so shaped that when said one end of the downtube is the lower end, the flange and bore being shaped so that retention of liquid within the bush is avoided when said member is disengaged from said seat, the unit also including a guide member movable with the valve member relative to the bush and dimensioned with respect to the bore of the bush so as to move freely therein parallel to the longitudinal axis of the downtube so as to guide the valve member when the latter is moving towards and away from its seat to prevent misalignment of the valve member and the seat, said guide member permitting passage of fluid past the guide member between the downtube and the bush.

4,142,659

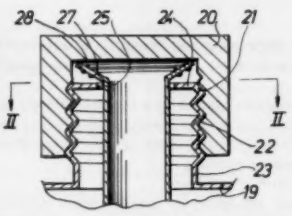
SEALING DEVICE FOR LIQUID RECEPTACLES

Bengt O. Petersson, Kungsbacka, Sweden, assignor to Aktiebolaget Svensk Rubber, Bor, Sweden

Filed Jul. 27, 1977, Ser. No. 819,574

Int. Cl.[2] B65D *47/06*

U.S. Cl. 222—514 **3 Claims**



1. A device in connection with receptacles for liquids which have a portion with a discharge opening and provided with a fastening portion, and a shutting means comprising a lid with an engaging portion corresponding to the fastening portion of the opening portion, a discharge tube which is arranged to be displaced between a first position extending from the opening portion into the interior of the receptacle and a second position extending from the opening portion and outwardly, said tube in the second position being intended to function in connection with a discharge operation, a first sealing surface arranged on the lid, and a second sealing surface arranged on the opening portion around said discharge opening, the device further comprising gas escape opening means defined by said second sealing surface and a resilient flange extending outwardly from said discharge tube, said flange in said first position of the tube being arranged to change shape between a first sealing condition in which it is squeezed between said first and second sealing surfaces and seals off said gas escape opening means when the lid is fully engaged with said opening portion and a second sealing condition over a limited extension in connection with the removal of said sealing surface of the lid from said second sealing surface in which said flange is pressed against said first sealing surface performing a sealing action and at the same time being removed from the second sealing surface, thereby uncovering said gas escape opening means around the tube for the escape of gas under pressure.

4,142,660

CABINET LATCH ASSEMBLY

Richard Culbertson, Manlius, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Filed May 23, 1977, Ser. No. 799,396

Int. Cl.[2] A45F *5/10*

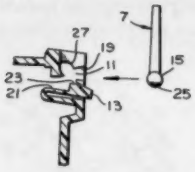
U.S. Cl. 224—45 P **7 Claims**

1. A cabinet latch assembly for providing ready attachment and release of a carry strap or like accessory to a portable cabinet, comprising:

(a) a fixed member having side walls including,

(1) a pair of angled grooves, one formed in each side wall of said member, said grooves having a first section that extends inwardly to angled corners, and a second section that extends upwardly,

(2) resilient tongue means which extends laterally between said grooves and is hinged to move between an upper, unstressed position and a lower, stressed position, and



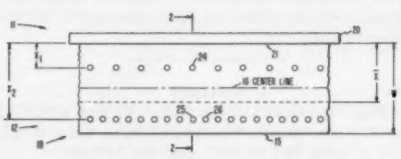
(b) a removable member for releasably engaging said fixed member including a pair of rod ends that insert into said grooves with said tongue depressed into its lower, stressed position and are held in place by said tongue member moving into its upper, unstressed position, said rod ends being held in place when resting in said second sections.

4,142,661

DIFFERENTIAL FLOW GUIDING AIR BEARING

Michael L. Nettles, and Peter A. Stevenson, both of Boulder, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 21, 1977, Ser. No. 835,254
Int. Cl.[2] B65H *17/32*
U.S. Cl. 226—97 **10 Claims**



1. Apparatus for aligning a movable elongated web in a direction transverse to its length while concurrently providing air bearing support for the web comprising:

a source of pressurized fluidic medium, and

an elongated plate member including a bearing surface over which the web is movable and a lip portion extending generally perpendicular above said bearing surface along one side thereof for defining a reference edge for the web, said plate member further including a plurality of openings therethrough commonly coupled to said source with said openings being arranged for communicating said fluidic medium through said plate member in a direction substantially normal to said bearing surface for establishing a differential flow of said medium between said surface and the web with said differential flow imparting force to the web towards said lip portion.

4,142,662

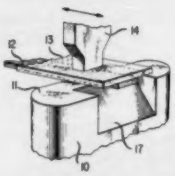
METHOD OF BONDING MICROELECTRONIC CHIPS

Walter R. Holbrook, Reading, Pa., and Louis A. Koszi, Scotch Plains, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 27, 1978, Ser. No. 872,896
Int. Cl.[2] B23K *1/02*; H01L *21/58*
U.S. Cl. 228—110 **13 Claims**

1. A method of bonding a microelectronic chip (**16**) to a bonding surface (**11**) comprising the steps of applying a bonding material (**15**) to at least a portion of the bonding surface and placing a microelectronic chip on the portion of the bonding surface including the bonding material, wherein the improvement comprises:

providing a carrier strip (**13**) which includes on one surface a layer (**12**) of said bonding material;



contacting a portion of said bonding material to the bonding surface; and

applying pressure to the opposite surface of the carrier strip in order to transfer said portion of bonding material to the bonding surface.

4,142,663

APPARATUS AND METHOD FOR MAKING PERFORATED TUBE

George A. Blatnik, Glendale, and John W. Kosareff, Los Angeles, both of Calif., assignors to Kaiser Steel Corporation, Oakland, Calif.

Filed Apr. 28, 1977, Ser. No. 791,971
Int. Cl.[2] B23K *31/06*; B21C *37/15*
U.S. Cl. 228—147 **18 Claims**

1. A tube mill for directly forming perforated tube from a strip of sheet metal which is fed to the mill in an imperforate condition, said mill comprising: a roll press forming the first pass of the mill and having opposed mating rolls mounted in parallel closely spaced relationship to one another and driven for rotation about the respective longitudinal axes thereof to draw the strip therebetween, one of said rolls having circumferentially continuous annular slots extending therearound and the other of said rolls having punches positioned therearound for entry into the slots of said one roll to perforate the strip as it is drawn between the rolls; a plurality of successive tube forming passes disposed downstream of said roll press to deform the strip exiting from the roll press into a tubular configuration wherein the longitudinal edges of the strip are in confronting relationship to one another; and, a welder disposed downstream of said tube forming passes to weld said confronted edges together.

4,142,664

METHOD OF JOINING TITANIUM CLAD STEEL PLATES

Norman G. Feige, South Salem, N.Y., assignor to Titanium Fabrication Corporation, Fairfield, N.J.

Filed Sep. 21, 1977, Ser. No. 835,466
Int. Cl.[2] B23K *31/02*
U.S. Cl. 228—165 **3 Claims**

1. A method of forming a joint between first and second titanium clad steel members comprised of the following steps:

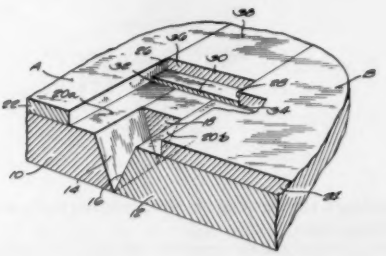
a. Scarfing said members so that the titanium layers are separated from the edges of the steel layers to be joined;

b. Aligning said first and second members for welding with

their steel portions in substantially abutting relation and their titanium portions separated and elevated therefrom;

c. Welding only said abutting steel portions together;

d. Metallizing the exposed steel surface and weld from one titanium-clad edge to the other titanium-clad edge with a refractory metal which is compatible with steel and with titanium;



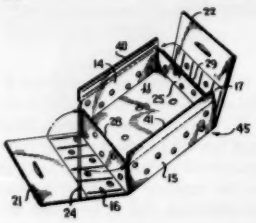
e. Filling the space bounded by the edges of the titanium-clad portions and the layer of refractory metal with titanium-bonded to the abutting surfaces while chilling the steel side of the joint; whereby the respective edges of said abutting steel and titanium portions are joined by a smooth full interface bond.

4,142,665

ONE PIECE CORRUGATED CONTAINER

Steven R. Jewell, Chino, and Albert R. Brown, Hughson, both of Calif., assignors to The Continental Group, Inc., New York, N.Y.

Filed Jul. 12, 1977, Ser. No. 814,982
Int. Cl.[2] B65D *5/28, 5/22, 21/02*
U.S. Cl. 229—33 **7 Claims**



1. A carton blank, said blank being substantially rectangular in outline and comprising a central bottom panel, first end panels at opposite ends of said bottom panel, side panels at opposite sides of said bottom panel, and second and third end panels at opposite ends of respective ones of said side panels, each of said end panels being substantially of the same length, at least two pairs of said end panels having lines of adhesive thereon, said lines of adhesive being parallel to one another and on the same surface of said blank.

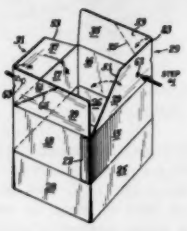
4,142,666

LOCK BOTTOM CARTON

Walter J. Rosenbaum, II, Ashtabula, Ohio, assignor to Inland Container Corporation, Indianapolis, Ind.

Filed Mar. 7, 1978, Ser. No. 884,122
Int. Cl.[2] B65D *5/10*
U.S. Cl. 229—39 R **9 Claims**

1. A lock bottom carton having a perimeter of four connected walls having hinged top flaps and hinged bottom flaps folded and interlocked to form a closed, generally flat bottom, the improvement comprising: a first bottom flap folded generally in the plane of the bottom and hingedly connected to one pair of adjacent walls and a second bottom flap folded generally in the plane of the bottom and hingedly connected to the other pair of adjacent walls, each said bottom flap comprising a folded portion and an unfolded portion, the unfolded portion being hingedly connected to one of the walls of the pair of adjacent walls to which its bottom flap is connected and the folded portion being hingedly connected to the other of the walls, a division between the folded and unfolded portions occurring along a score that extends transversely of the bottom flap and intersects the corner formed between the pair of walls to which the bottom flap is connected, the unfolded portion having a free tapering side edge that extends from a point along its hinge spaced from said corner and that is directed inwardly



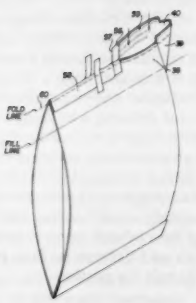
of the perimeter of the connected walls, and said folded portion having a part folded internally of the carton back on itself along a fold line that forms one side edge of the fold portion and that is directed inwardly of the perimeter from said corner, the non-folded side edge of each folded portion internally overlapping the free tapered side edge of the opposing non-folded portion, thereby forming a strong lock bottom in said carton without stitching, staples, glue or other fastening means, said bottom being pushable internally after use to collapse the carton for reshipment to another location for re-use, the lock bottom automatically reforming upon opening the carton from the collapsed state.

4,142,667

SEALABLE LONGITUDINAL SLEEVELESS VALVE BAG

William R. Runo, 7010 S. Windsor, Littleton, Colo. 80123

Filed Jul. 25, 1977, Ser. No. 818,900
Int. Cl.[2] B65D *31/14;* **B31B** *49/04*
U.S. Cl. 229—62.5 **26 Claims**



1. A bag having a sleeveless longitudinal filling valve comprising a tube closed at one end, longitudinal creases forming front and rear walls, a first rear wall portion being folded along a lateral axis and sealed to said front wall for providing a reference of said lateral axis, and a second rear wall portion extending longitudinally beyond said lateral axis for forming with opposed front wall portion said longitudinal valve, said bag includes at least two plies of flexible sheet material, the outer ply of said second rear wall portion extends laterally beyond the termination of the inner ply of said first rear wall

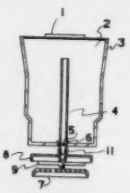
portion, said longitudinal valve being closable by folding said second rear wall portion along said lateral axis and sealing said second rear wall portion to said opposed front wall portion with the outer ply of said extended second rear wall portion superimposed on the inner ply of said first rear wall portion to provide a leak and sift proof and insect impervious bag.

4,142,668

SERUM-PLASMA SEPARATOR AND TRANSFER APPARATUS

Jae Y. Lee, 1122 Sunny Hill Dr., Columbus, Ohio 43221

Filed Oct. 1, 1976, Ser. No. 728,849
Int. Cl.[2] B04B *15/08*
U.S. Cl. 233—1 R **10 Claims**



1. A Serum-Plasma centrifugal separator tube with transfer apparatus and means for centrifuging said tube apparatus comprising a:

container having its lower end recessed and adapted to sealing fit into the open end of a test tube, the upper top portion of said container comprised of a thin-flexible material and having a weight centrally positioned thereon, and

the lower most portion of the container having an aperture therein;

a capillary tube extending into a substantial portion of said container and its other end extending through said aperture in said container;

an extendable capillary tube having its extreme end connected to a filter; and means for joining said extendable capillary tube with said first named capillary tube;

a port positioned in said extendable capillary tube adjacent said extreme end connected to said filter;

said extendable capillary tube contracted adjacent said joining means and extended together with said filter when a liquid sample is centrifuged thereby separating the liquid from other particulates, and said weight depressing said flexible top portion of said container also when a liquid sample is centrifuged; and when the centrifuge action decreases said depressed flexible top returns to its normal position to suck said liquid through said capillary tube into said container.

4,142,669

CONTINUOUSLY OPERATING CENTRIFUGAL SEPARATORS

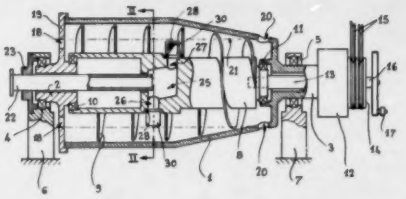
Gérard Burlet, Villeurbanne, France, assignor to Robatel S.L.P.I., Genas, France

Filed Dec. 27, 1977, Ser. No. 864,905
Claims priority, application France, Oct. 20, 1977, 77 32338
Int. Cl.[2] B04B *1/20*
U.S. Cl. 233—7 **3 Claims**

1. A continuously operating centrifugal separator for separating solids from a suspension in liquids comprising:

a hollow bowl rotatable in a predetermined direction about a longitudinal axis, said bowl including a peripheral wall and including a first end and a second end, and the bowl having solid discharge ports at said first end and liquid discharge ports at said second end, said liquid discharge ports being situated at a greater radial distance from said longitudinal axis than said solid discharge ports thereby to form within said bowl under the action of centrifugal force an annular liquid mass having an inner substantially cylindrical liquid surface;

a conveyor screw co-axially disposed within said bowl and rotatable in said predetermined direction, said conveyor screw including a hub and helical screw turns extending radially from said hub close to the peripheral wall of said bowl to engage solids separated by centrifugal force against said wall, said hub having an inner chamber operative to continuously receive said suspension to be separated and the hub having feed channels each extending outwardly from said chamber and each having a suspension discharge end located close to but short of said liquid surface and each discharge end having an opening directed to discharge the suspension adjacent to said liquid surface and substantially tangentially in said predetermined direction of rotation;



a suspension feed tube extending axially through said hub and opening into the chamber thereof;

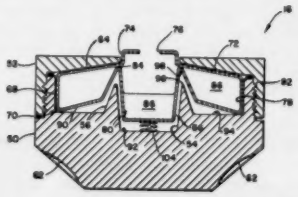
and means to rotate said bowl and said conveyor screw in said predetermined common direction, but at different speeds selected to cause the turns of said conveyor screw to move separated solids towards said solid discharge ports in said first end.

4,142,670

CHYLOMICRON ROTOR

Kenzo Ishimaru, San Jose, and Lee Gropper, Los Altos Hills, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jan. 27, 1978, Ser. No. 873,171
Int. Cl.[2] B04B *1/06*
U.S. Cl. 233—20 R **5 Claims**



1. A rotor assembly for use with a centrifuge, said rotor comprising:

a bottom rotor section having at least two cavities;

a top rotor section removably attached to said lower rotor section; and

a rotor liner having a lower portion and an upper portion, said lower portion having a central chamber and an annular chamber for receipt of a fluid sample, said liner being positioned within said bottom rotor section, said central and annular chambers forming a annular sealing junction within said liner against which the upper portion of said liner is compressed when said top rotor section is secured to said bottom rotor section, said lower portion of said liner being spaced from the bottom of said cavities when said rotor is stationary, said lower portion of said liner being flexed toward said bottom of said cavities when said

rotor is spinning so that said annular sealing junction moves away from said upper portion of said liner to establish fluid communication between said chambers.

4,142,671
ROTOR OF CENTRIFUGAL SEPARATOR

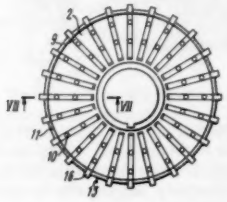
Jury F. Ivin, ulitsa Kosareva, 15, kv. 62; Boris P. Shevelin, ulitsa Bardina, 40, korpus 1, kv. 209, both of Sverdlovsk; Vasily I. Sokolov, Kutuzovsky prospekt, 2, kv. 181, Moscow, and Arkady N. Levischev, ulitsa Griboedova, 30, kv. 21, Sverdlovsk, all of U.S.S.R.

Filed May 9, 1978, Ser. No. 905,033

Claims priority, application U.S.S.R., May 11, 1977, 2493957[1]

Int. Cl.[2] B04B *1/08*

U.S. Cl. 233—29 **3 Claims**



1. A rotor of a centrifugal separator for separating liquid suspensions and emulsions, comprising: a central rotary drum with an essentially vertical rotation axis; a pack of separator plates placed axially in said drum, each one of said plates being made as a truncated cone and including an inner flange and an outer flange; cleats extending radially from the inner flange to the outer flange; projections dividing adjacent plates from each other in order to provide between them a gap greater than the height of said cleats; means for delivering a liquid to be separated to the pack of separator plates; means for discharging the resulting separation products; each one of said plates made as a truncated cone being provided with radial projections arranged essentially uniformly over the circumference of said outer flange of the plate such as to form between adjacent projections recesses open into a space defined by the walls of the central drum and the surface of the outer flanges of the plates, the shape and dimensions of said radial projections of the plates being such as to ensure overlapping of the entire axial gap between adjacent plates in the region of said radial projections, groups of said recesses forming channels arranged over the generatrices of the pack of plates parallel with the drum rotation axis.

4,142,672
COUNTER WHEEL ASSEMBLY WITH IMPROVED RESET CONTROL MECHANISM

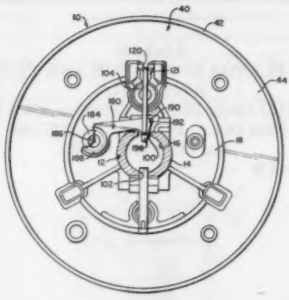
Bruno S. Smilgys, Hartford, Conn., assignor to Veeder Industries Inc., Hartford, Conn.

Filed Dec. 5, 1977, Ser. No. 857,241

Int. Cl.[2] G06C *15/42*

U.S. Cl. 235—144 D **4 Claims**

1. In a counter wheel assembly having an indicia wheel adapted for being rotatably supported on a reset control shaft, an independently rotatable reset gear coaxial with the indicia wheel, and a reset pawl mechanism with a reset gear pawl pivotally mounted on the indicia wheel for pivotal movement about an axis transverse to the axis of rotation of the indicia wheel for selective engagement and disengagement of the reset gear, the reset pawl mechanism having an inwardly extending projection selectively engageable by the reset control shaft for pivoting the reset gear pawl outwardly for engagement of the reset gear, the inwardly extending projection of the reset pawl mechanism being receivable in an axial slot in the reset shaft for locking the indicia wheel to the reset shaft in its fully reset position with the reset gear disengaged, the improvement wherein the reset pawl mechanism comprises a reset control pawl pivotally mounted on the indicia wheel about an axis parallel to and offset from the axis of rotation of the indicia wheel and having said inwardly extending projection selectively engageable by the reset shaft for selectively pivoting the reset control pawl outwardly, the reset control pawl being mounted for engaging and pivoting the reset gear pawl outwardly for engagement of the reset gear when the reset control pawl is pivoted outwardly by the reset shaft.



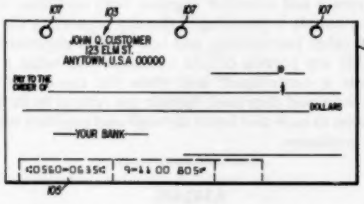
4,142,673
DOCUMENT HOLE MASK CIRCUITRY

Frederick H. Dear, Rochester, N.Y., assignor to Burroughs Corporation, Detroit, Mich.

Filed Oct. 21, 1977, Ser. No. 844,477

Int. Cl.[2] G06K *7/14*; G06F *15/30*

U.S. Cl. 235—458 **10 Claims**



5. In a modular document printing system, a circuit for inhibiting the interruption of an output signal from a document sensor upon the sensing of an aperture in a document by said document sensor, said circuit comprising:

retriggerable timing means for generating an output signal of a preselected value for a preselected duration when said retriggerable timing means is triggered and for inhibiting the generation of said output signal when said retriggerable timing means is continuously triggered for a period exceeding said predetermined time interval;

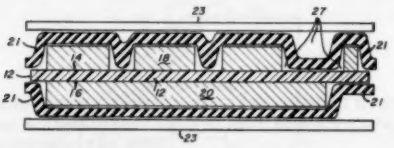
oscillator means for generating a series of oscillator pulses; and

trigger means receiving said document sensor output signal and said oscillator pulses for retriggering said retriggerable timing means upon the reception of said output signal and said oscillator pulses.

4,142,674
RECOGNITION AND IDENTIFICATION KEY HAVING ADAPTABLE RESONANT FREQUENCY AND METHODS OF ADAPTING SAME

Charles A. Walton, Los Gatos, Calif., assignor to Schlage Electronics, Inc., Sunnyvale, Calif.

Filed Jan. 17, 1977, Ser. No. 760,115
Int. Cl.[2] G07F 1/06; G06K 7/00
U.S. Cl. 235—492 22 Claims



1. A method of changing the resonant frequency of a recognition and identification key comprising:

providing a dielectric substrate;

providing a first conductive layer having a first inductance on one surface of the substrate;

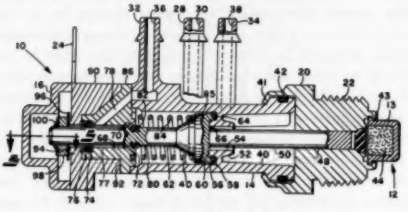
providing a second conductive layer on an opposed surface of the substrate, the second layer having a second inductance and forming a first capacitance with the first layer such that the first and second inductance and the first capacitance are resonant at a first frequency, at least one of the layers having a configuration which is capable of being changed; and

changing the configuration of the layers such that the key is resonant at a predetermined second frequency.

4,142,675
THREE PORT THERMAL VACUUM VALVE WITH ELECTRICAL SWITCH

Edgar W. Maltby, Elgin, Ill., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jun. 8, 1977, Ser. No. 804,826
Int. Cl.[2] G05D 23/02
U.S. Cl. 236—86 4 Claims



1. A thermally responsive device for valving a fluid pressure signal port between one fluid pressure source and a second fluid pressure source and simultaneously performing an electrical switching function, said device comprising:

(a) housing means defining a first and second fluid pressure source port and a fluid pressure signal port, said housing means further defining an elongated fluid chamber communicating with each of said ports;

(b) valve means disposed within said chamber, said valve means including,

(i) means defining a first valve seat in said housing means, said first valve seat formed by a first annular, resilient member, said housing defining an annular groove opening axially with respect to said fluid chamber, said first resilient member registered in said groove,

(ii) means defining a second valve seat integrally formed by said housing means, said second valve seat including a first portion formed by a tapered annular surface and a second portion having a substantially cylindrical configuration, said first portion intersecting with said second portion,

(iii) a valve member disposed within said housing means, said valve member being of single piece construction, said valve member defining a first valve surface formed by an axially extending lip, said valve member including a second valve surface formed by a second resilient annular member mounted on said valve member and movable therewith, said valve member being movable between first, second and third positions, in which first position said first valve surface axially abuts against said first valve seat and isolates said first source port from said signal port and said second source port, and in which third position said second valve surface seals first against said first portion and then said second portion of said second valve seat for isolating said second source port from said signal port and said first source port, said second valve seat permitting said second valve surface to sealingly engage therewith as said valve member moves along said third position, said valve member being operative in said second position to permit fluid communication between said first and second source ports and said signal port;

(c) electrical switch means disposed within said housing means, said switch means including movable contact means having an actuated and an unactuated condition, said switch means being operably connected to said valve member such that said movable contact means is in an unactuated condition when said valve member is in said first position, said movable contact means being in an actuated condition when said valve member is in other than said first position;

(d) means biasing said valve member to said first position;

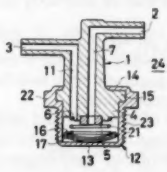
(e) means isolating said switch means from said fluid chamber, said isolating means including seal means engaging said valve member and said housing means;

(f) thermally responsive means associated with said housing means and including means operative to move said valve member from said first through said second to said third position in response to predetermined temperatures.

4,142,676
BIMETAL VALVE

Kyo Hattori, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jul. 5, 1977, Ser. No. 812,681
Claims priority, application Japan, Sep. 18, 1976, 51-111306
Int. Cl.[2] G05D 23/10
U.S. Cl. 236—87 8 Claims



1. A bimetal valve comprising:

a first housing member having first and second fluid passages therein;

a second housing member fitted on said first housing member in a manner to define a chamber therebetween having a bottom wall provided by one end of said second housing member;

first and second bimetal discs positioned in said chamber, said first bimetal disc, when said chamber is oriented in an axially vertical position, assuming an upwardly convex shape when the ambient temperature of said valve is above a first predetermined temperature level, said second

bimetal disc assuming a downwardly convex shape, when the ambient temperature is below a second predetermined temperature level higher than said first temperature level, and assuming an upwardly convex shape, when the ambient temperature is above said second temperature level;

resilient means in said chamber to urge said first bimetal disc against the bottom wall of said chamber;

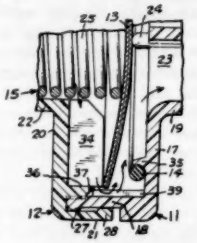
said first fluid passage opening into said chamber and provided at said opening with a valve seat cooperative with said first bimetal disc to close said opening, whereby said opening may be opened or closed by said first bimetal disc cooperating with said valve seat in response to the changes in shape of said first and second bimetal discs at varying ambient temperatures including said first and second temperature levels.

4,142,677

FUEL VAPOR VENT VALVE

George C. Ludwig, Owosso, Mich., assignor to Tom McGuane Industries, Inc., Madison Heights, Mich.

Filed Jun. 27, 1977, Ser. No. 810,079
Int. Cl.[2] F10K *24/04*
U.S. Cl. 236—101 E **13 Claims**



1. A fuel vapor vent valve comprising

a plastic body including a base wall and a peripheral wall,

a plastic cap including a base wall and a peripheral wall surrounding the peripheral wall of the plastic body,

said peripheral wall of said body having a radially outwardly extending annular rib,

said base walls having openings therein,

said peripheral wall of said cap having a radially inwardly extending rib,

said ribs being adapted to pass over one another to provide a snap fit during assembly,

said base wall of said body having integral O-ring retaining means,

an O-ring retained by said integral means,

a bi-metallic disc positioned in said body within the confines of said peripheral wall of said body and normally engaging said O-ring,

integral stop means on said cap adapted to be engaged by said bi-metal disc when said disc is caused to move to a position out of engagement with said O-ring upon increase of the ambient temperature,

said peripheral wall of said body and said peripheral wall of said cap being ultrasonically welded to one another,

said peripheral wall of said body engaging the base wall of said cap.

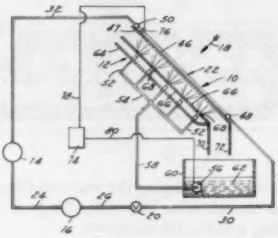
4,142,678

COMBINED HEAT PUMP SYSTEM AND ICE MAKING SYSTEM

Edward W. Bottum, 9357 Spencer Rd., Brighton, Mich. 48116

Filed Jul. 11, 1977, Ser. No. 814,458
Int. Cl.[2] F25B *29/00*
U.S. Cl. 237—2 B **3 Claims**

1. A combined heat pump system and ice making system, said heat pump system including a compressor, evaporator, and condenser, all connected together in operative relationship, said evaporator comprising a first plate element having at least one surface portion for absorbing sunrays and converting such rays to heat energy, tubular structure in heat exchange relationship with said first plate element for conduction of heat energy from the first plate element to the tubular structure, fluid refrigerant circulated in said heat pump system, and means for deploying water on said first plate element at a preselected evaporator temperature to form ice thereon, said means for deploying water on said first plate element adapted to deploy water on the underside of said first plate element



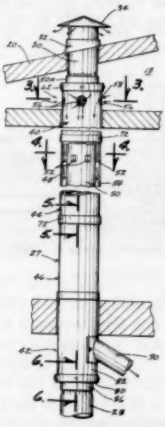
with said first plate element being oriented so that one surface portion defines an underside, and a second plate element having opening means therein for passage of water provided between said means for deploying water on said first plate element whereby ice formed on the first plate element may drop downwardly onto said second plate element for transportation away from said first plate element, and storage means to receive ice which is transported on said second plate element.

4,142,679

BUILDING HEATING SYSTEM

Donald C. McKillop, Sr., 343 6th St., Canistota, S. Dak. 57012

Filed Jun. 29, 1977, Ser. No. 811,076
Int. Cl.[2] F24D *5/04*
U.S. Cl. 237—54 **10 Claims**



1. A building heating system comprising,

a building having a heated lower area and an upper attic area enclosed by a roof, and ventilating means in said attic to allow outside air to circulate through said attic,

a heating unit in said lower area for heating said lower area, and including a smoke flue pipe extending from said heating unit upwardly through said attic and roof for communication with the atmosphere, and

a heat jacket on said flue pipe forming a passageway therebetween extending from said attic substantially to said heating unit and having air inlet means at its upper end in said

attic and outlet means at its lower end for discharge of heated outside air into said heated area.

4,142,680

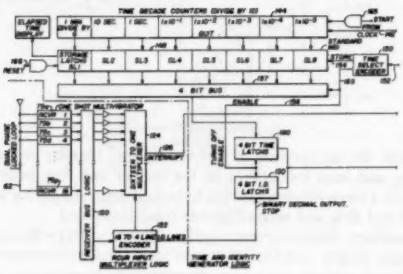
HIGH RESOLUTION TIMING RECORDING SYSTEM

Robert A. Oswald, and Charlie R. Kilet, both of P.O. Box 458, Gardnerville, Nev. 89410

Filed Mar. 21, 1977, Ser. No. 779,865

Int. Cl.[2] G06F *15/28*

U.S. Cl. 235—92 TA **6 Claims**



1. A system for indicating a lapsed time from a start point for each of a plurality of entities to reach a succession of stations along a path of movement of all of said entities comprising: radio frequency transmitting means carried by each of said entities, each said means emanating a radio frequency signal discrete for each entity; radio frequency receiving means located at each of said stations and each adapted to receive an interval of signals from said transmitting means when the transmitting means carried by said entity is within a reception area of each said station; a plurality of detector means connected to said receiving means, each said detector means being adapted to discriminate and detect signals of a selected one of said discrete radio frequency signals; activating means associated with each of said detector means constructed and arranged to generate an output signal when an interval of signals from the corresponding discrete radio frequency signal is received thereby; tagging means for generating a binary tag word identifying the output signal corresponding to each said entity connected to each said activating means; a timing counter connected to each of said detector means; clock means operable to operate said timing counter; start means connecting said clock means to said timing counter to start said timing counter; a timing counter latch means for said timing counter operable by said output signal to cause said timing counter latch means to store a binary count representative of said lapsed time upon being actively energized thereby; random access memory means coupled to said tagging means and said timing counter latch to sequentially store each said count and each said tag and; control means responsive to said output signal for effecting transfer of each said tag and each said count to said random access memory and for causing storage thereof in said random access memory as a multi-bit data word whereby at least each said multi-bit data word will indicate lapsed time from said start for each said entity upon an interval of signals of the discrete radio frequency signal being received at each of the succession of predetermined stations.

4,142,681

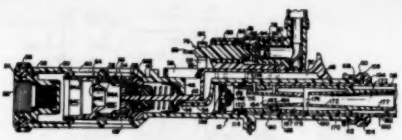
MULTI-STAGE SOLUTION PROPORTIONER DISPENSER

Valentine Hechler, IV, 26 Meadow View Dr., Northfield, Ill. 60093

Continuation of Ser. No. 615,800, Sep. 22, 1975, abandoned, and a continuation-in-part of Ser. No. 520,676, Nov. 4, 1974, Pat. No. 3,984,053, which is a continuation-in-part of Ser. No. 443,831, Feb. 27, 1974, Pat. No. 3,933,176. This application Jan. 10, 1978, Ser. No. 868,439

Int. Cl.[2] B05B *9/00*

U.S. Cl. 239—318 **6 Claims**



1. A solution proportioning, mixing and dispensing unit having a shell defining a compartment with spaced solvent and solute inlet openings comprising:

an upstream element defining a primary confluence zone and plurality of converging wall nozzles in communication with said solvent opening, said nozzles terminating in inlet ports to confluence zones for converting solvent pressure flow to kinetic flow energy directed through the primary confluence zone, said upstream member having a primary stage diverging wall for reconverting kinetic energy to pressure leading from an outlet port that is spaced from one of said inlet ports across the primary confluence zone that is in communication with said solute opening;

an intermediate element defining with the upstream element a second stage confluence zone in communication with said primary stage diverging wall and a second stage diverging wall energy converter in communication with the second stage confluence zone through an outlet therefrom in alignment with another one of said nozzles;

a downstream element defining with said second element a third stage confluence zone between said second stage diverging wall and an outlet port to a third diverging wall energy converter means for directing the mixture output to a dispensing means having a port that is approximately at least as large in flow area as the last said confluence zone outlet port.

4,142,682

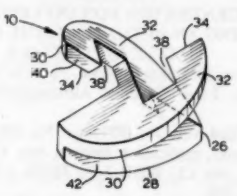
SPRAY NOZZLE INSERT

Norman D. Bowen, 79 Portland St., Toronto, Ontario, Canada (M8Y 1A8)

Filed Feb. 22, 1977, Ser. No. 770,883

Int. Cl.[2] B05B *1/34*

U.S. Cl. 239—488 **6 Claims**



1. A vaned insert for a spray nozzle, the insert comprising: a central planar web having a lower edge portion; a pair of vanes extending perpendicularly from opposed sides of the web, the vanes being disposed in oblique crossing planes; each vane having a distal portion disposed in co-planar relationship with the remainder of the vane and extending past the plane of the

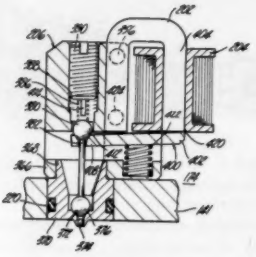
web, and said vanes defining inwardly extending recesses located adjacent to said distal portions.

4,142,683

ELECTRIC FUEL INJECTION VALVE

Gary L. Casey, Troy, and Bruce H. Tuller, Milford, both of Mich., assignors to The Bendix Corporation, Southfield, Mich.

Filed Mar. 17, 1977, Ser. No. 778,806
Int. Cl.[2] B05B *1/30*
U.S. Cl. 239—585 **12 Claims**



1. An injector for controlling the flow of fuel from a source of fuel to a means for entraining the fuel in a source of air in accordance with a preselected air/fuel ratio comprising: a frame member, valve means supported in said frame member including means forming a valve seat and a valve head cooperating therewith, said valve seat having formed therein a metering orifice, and electromagnetic actuating means for said valve head supported by said frame member including a generally C-shaped core, a coil mounted on one leg of said core and an armature supported by said frame member adjacent the open end of said core having an extension thereof engaging said valve head, means for adjusting the degree of travel of said armature and thus said valve head, said injector being open to the environment in which it is placed, said valve head including first and second ball elements, said first ball element being adapted to be made mateable with said valve seat and said second ball element being interconnected with the extension of said armature, and means for retaining said armature relative to said frame member including spring means supported on one end thereof by said frame, the other end thereof being engageable with said armature, said means for adjusting the travel of said valve head includes first and second adjustment means threadedly received in said frame member, said injector further including resilient means urging said valve head into engagement with said valve seat, said first adjustment means adjusting the resilient force of said resilient means.

4,142,684

PULSE GENERATOR FOR INTERMITTENTLY ENERGIZING AN ACTUATING COIL OF A SPRAY NOZZLE OR THE LIKE

Karl Schweitzer, Oberlangkampfen, Austria, assignor to Maschinenfabrik Peter Zimmer Aktiengesellschaft, Kufstein, Austria

Filed May 26, 1977, Ser. No. 801,014
Claims priority, application Austria, Jun. 15, 1976, 4375/76
Int. Cl.[2] B05B *1/30*; H03K *1/00*
U.S. Cl. 239—585 **20 Claims**

1. a pulse generator for the controlled energization of an inductive load, comprising:

a main supply of direct current;

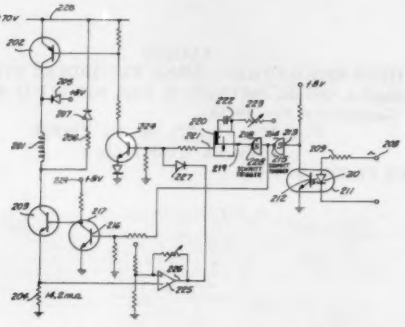
a first and a second power transistor connected across said main supply in series with each other and with a load inductance;

a source of control pulses;

first and second biasing means normally cutting off said first and second power transistors, respectively;

first timing means connected to said source via a photoelectric coupler and further connected to said first biasing means for unblocking said first power transistor during a first interval upon the occurrence of a control pulse;

second timing means connected to said source via said photoelectic coupler and further connected to said second biasing means for unblocking said second power transistor during a second interval longer than said first interval



upon the occurrence of a control pulse, thereby energizing said load inductance to the end of said first interval with a large driving current from said main supply by way of said first and second power transistors; and

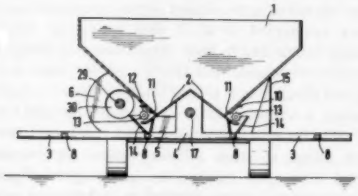
an ancillary direct-current supply of lower voltage than said main supply connected across said load inductance by way of said second power transistor for maintaining said load inductance energized to the end of said second interval with a holding current of a magnitude substantially less than that of said driving current.

4,142,685

MACHINE FOR THE PNEUMATIC SPREADING OF GRANULAR MATERIAL

Heinz Dreyer, Hasbergen-Gaste; Heinz Bolwin, Georgsmarienhütte, and Werner Hülsmann, Osnabrück, all of Fed. Rep. of Germany, assignors to Amazonen-Werke H. Dreyer, Hasbergen-Gaste, Fed. Rep. of Germany

Filed Mar. 7, 1977, Ser. No. 775,355
Claims priority, application Fed. Rep. of Germany, Mar. 9, 1976, 2609686
Int. Cl.[2] A01C *15/04*
U.S. Cl. 239—655 **12 Claims**



1. In a machine mountable on another vehicle for the pneumatic spreading of granular material along a working direction and having a central hopper divided in its lower area by a roof-shaped middle part disposed in the working direction into two sections which have outlet openings, and a metering device driven through a regulating drive, receptive of material from the outlet openings, tubes receptive of material from the metering devices and having a portion overreaching the

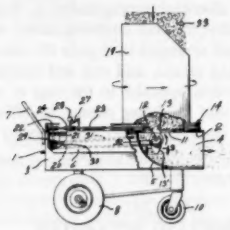
hopper transversely of the working direction and discharge openings at the outer extremities of said tubes disposed at intervals from one another transversely of the working direction, a blower situated at the forward end of the machine and having an impeller shaft driveable by the power take-off shaft of the vehicle pulling the machine, an air duct connecting the blower to the tubes, wherein the improvement comprises the blower having a front wall which does not extend forward of the front wall of the hopper, the impeller shaft of the blower extending to the rear end of the hopper, and means for driving of the impeller shaft by the power take-off shaft of the vehicle pulling the machine comprising a shaft disposed underneath the roof-shaped middle part of the hopper.

4,142,686

STRAW CUTTING MACHINE

Gratien Houle, Rte. 139, Wickham, Co. Drummond, Quebec, Canada

Filed Nov. 1, 1977, Ser. No. 847,500
Int. Cl.[2] B02C *13/286*
U.S. Cl. 241—101.7 **6 Claims**



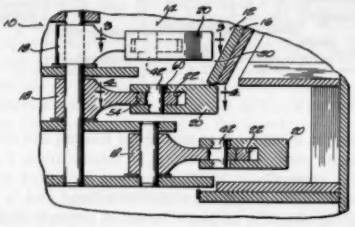
1. A manually movable straw cutting machine serving to dinsintegrate and hash the straw from a bale of compressed straw in the form of a block, said machine comprising a body, a handbar fixed to said body, support wheels and a steering wheel mounted underneath said body for supporting and steering the same by means of said handbar, said body having a top and side walls, said top being normally in horizontal position and provided with a row of narrow straight slots substantially parallel and slightly spaced one from the other, a tube fully opened at both ends and mounted upright on said top in register with the row of slots, guide means mounted on said top to support said tube in an upright position while allowing said tube to rotate about its longitudinal axis, said tube defining guiding surfaces engageable with the side faces of a bale of compressed straw inserted within said tube, said guiding surfaces allowing downward sliding movement of said bale of straw under its own weight until the bottom surface of said bale of straw rests on said top, but preventing rotation of said bale of straw relative to said tube, power means mounted in said body to rotate said tube about said longitudinal axis, a shaft mounted in said body and disposed underneath and substantially parallel to said top and transversely to said row of slots, said shaft being perpendicular to and intersecting the longitudinal axis of said tube, a series of parallel spaced-apart radial cutters secured to said shaft and each in register with one of said slots, said cutters being thinner than the width of said slots, power means to rotate said shaft, said cutters, when rotating, passing through said slots without contacting the edges of said slots and projecting above said top to engage and cut the straw and eject the cut straw underneath said top, said body also forming underneath said top a curved passage in communication at one end with said slots and opening at the other end at the exterior of said body by means of a discharge opening made in one of said side walls of said body, whereby the straw cut by said cutters is directly ejected by the latter through said passage and said discharge opening, said series of cutters extending along said shaft through a radius of the circular path described by the radially outermost corner of the bottom surface of said bale of straw, during rotation of the latter, whereby said cutters sweep the entire bottom surface of said bale of straw during each complete rotation of said tube.

4,142,687

ADJUSTABLE ARM FOR SHREDDER HAMMER

David R. Potwin, Oconomowoc, Wis., assignor to The Heil Co., Milwaukee, Wis.

Filed Dec. 14, 1977, Ser. No. 860,427
Int. Cl.[2] B02C *13/16*
U.S. Cl. 241—194 **5 Claims**



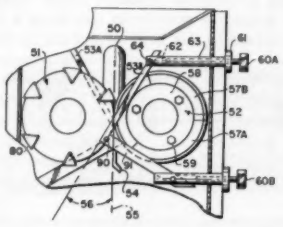
1. In a mill having a working chamber, a rotor, means to rotate the rotor within said chamber, a plurality of arms connected to and extending from the rotor, said arms having free ends, working elements having sockets for receiving the ends of said arms, the improvement comprising means for connecting the working elements to said arms to provide adjustment of the radial position of the working elements with respect to said rotor, said means including pins for holding said working elements on said arms, slots in said arms, apertures in said working elements registrable with said slots to receive said pins, spacer means receivable in said slots to locate the pins in a selected position in said slots, and means to secure the pins in said apertures in said working elements.

4,142,688

APPARATUS FOR HANDLING WASTE INCLUDING RUBBER TIRES

Albert O. Johnson, Rte. 8, Box 1052, Livingston, Tex. 77351; William E. Holiman, P.O. Box 66284, Houston, Tex. 77006, and Stephen D. Buchanan, 1419 Ebony, Houston, Tex. 77018

Division of Ser. No. 770,002, Feb. 18, 1977, Pat. No. 4,081,143. This application Aug. 24, 1977, Ser. No. 827,244
Int. Cl.[2] B02C *13/06*
U.S. Cl. 241—236 **5 Claims**



1. Apparatus for shredding a variety of waste materials comprising in combination, a set of interengaging counter-rotating wheels spaced apart on two parallel shafts wherein selected wheels have spaced teeth extending beyond the wheel circumference wherein the teeth comprise triangular shaped pieces affixed to the sides of said selected wheels by one apex and having two apices extending beyond the circumference of the wheels.

4,142,689

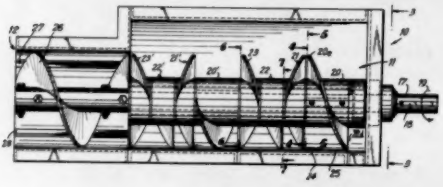
SHREDDER-FEED DEVICE

Dennis E. Kemp, Jr., P.O. Box 167, South Orange, N.J. 07079, and Albert E. Morin, 150 Medford St., Warwick, R.I. 02889

Filed Sep. 26, 1977, Ser. No. 836,297

Int. Cl.[2] B02C *18/24, 19/22*

U.S. Cl. 241—247 **6 Claims**



1. An anti-jam shredder-feed device for feeding and comminuting elongate materials comprising, in combination, a housing having a generally cylindrical bottom including an upstream in-feed end and a downstream discharge end, a drive shaft extending coaxially of and adapted to rotate within said housing, a drive auger section in said housing keyed to said shaft for rotation therewith, having a pitch inclination sloped to advance materials in a downstream direction from said in-feed toward said out-feed end, a stationary knife member in downstream spaced relation to said drive section extending transversely between said housing and said shaft, an idler auger section mounted for rotation relative to said shaft between said knife and said drive section, the adjacent end portions of said auger sections defining transversely extending knife portions positioned to pass in proximate spaced relation upon relative rotation of said sections, the downstream end of said idler auger section defining a further knife portion movable in a path adjacent said stationary knife member responsive to rotary movement of said idler section.

4,142,690

SPOOL CARRIER, PARTICULARLY FOR WINDING UP TEXTILE THREADS OR THE LIKE

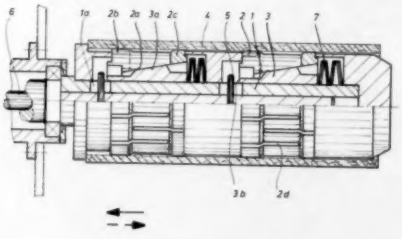
Herbert Karle, Rheinstetten, and Gunter Jahrig, Eggenstein-Leopoldshafen, both of Fed. Rep. of Germany, assignors to Industrie-Werke Karlsruhe Augsburg Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 676,670, Apr. 14, 1976, abandoned. This application Sep. 20, 1977, Ser. No. 834,899

Claims priority, application Fed. Rep. of Germany, Apr. 18, 1975, 7512509

Int. Cl.[2] B65H *54/54, 75/30*

U.S. Cl. 242—46.4 **6 Claims**



1. A spool chuck for winding textile threads and for centering and clamping spools therefor made of a deformable material such as paperboard, multi-layer paper, etc. comprising a coupling tube, a plurality of complementary wedging means axially spaced along said coupling tube whereby said wedging means are operative to engage and disengage a spool, each of said wedging means including an outer member and an inner member, said outer and inner members of each of said wedging means being axially movable relative to one another along said coupling tube, each of said outer members being of an annular configuration having an outer surface with a reduced diameter area intermediate the ends thereof, leaving a spool bearing raised portion at either end thereof, and having a tapered inner surface, and each of said inner members being an annular member having a tapered outer surface complementing the tapered inner surface of its respective outer member, said outer tapered surface of each of said inner members being co-extensive in axial length to the axial length of the reduced diameter area of its respective outer member to provide radial resiliency to said outer members in the area of said spool bearing portions, spring means normally biasing said outer and inner members of each of said wedging means toward a spool engaging position, in which each of said spool bearing portions bears normally against a spool with substantially equal force, said outer member of each of said wedging means having a series of longitudinally extending circumferentially spaced slots to render each of said outer members radially compressive, the longitudinal slots extending inwardly from the opposed ends of said outer member in an alternate arrangement, a coupling rod extending longitudinally of said coupling tube, and means annealed to said rod and arranged to engage the inner member of each of said wedging means, said rod and annealed means displaceable in a direction opposite to the bias of said spring means operating on said wedging means to effect relative displacement of said inner and outer members to effect the release of a spool mounted on said chuck.

4,142,691

SOD ROLLING APPARATUS

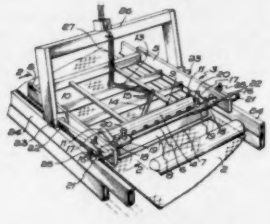
John R. Watton, 20 Headswell Crescent, Redhill, Bournemouth, England

Filed May 5, 1978, Ser. No. 903,773

Claims priority, application United Kingdom, May 10, 1977, 19482/77

Int. Cl.[2] B65H *75/02;* **A01B** *45/04*

U.S. Cl. 242—55 **11 Claims**

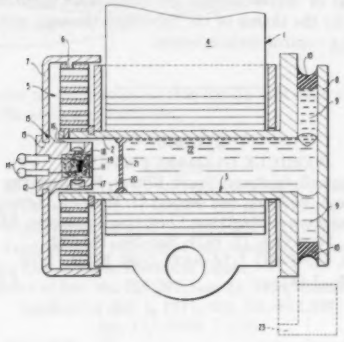


1. Apparatus for starting a turn in the leading end of a strip of sod travelling along a conveyor from a forward receiving position to a rearward discharging position and for causing the sod to roll up once the end of the strip has been turned, the apparatus comprising deflecting means having a forward part comprising a scoop extending transversely of the conveyor between liftable side members and having a uniform cross-section curving rearwardly and upwardly from the conveyor, the scoop being mounted to swing about a pivot axis extending between the side members above the forward edge of the scoop, the forward part also comprising a stop plate carried by the pivot axis of the scoop so as to be able to swing with the scoop and extending over a substantial length of the scoop, the stop plate being adjustable about the pivot axis so as to project towards the scoop anywhere between the forward and rearward edges of the scoop, and the deflecting means also having a rearward part comprising cross-bars on its underside between the side members.

4,142,692
REEL MECHANISM FOR ELIMINATION OF BELT LOOSENESS OF A SAFETY BELT SYSTEM

Rudolf Andres, Sindelfingen, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 3, 1977, Ser. No. 803,385
Claims priority, application Fed. Rep. of Germany, Jun. 5, 1976, 2625573
Int. Cl.[2] A62B *35/00*; B65H *75/48*
U.S. Cl. 242—107 26 Claims



1. A reel mechanism for the elimination of the belt looseness of a safety belt system upon exceeding a predetermined vehicle deceleration, comprising a wind-up roller means, an ignitable propellant charge means for the initiation of a retracting movement of the wind-up roller means, the wind-up roller means having the propellant charge means arranged in an axial direction thereof characterized by:

a retraction means for continuously effecting the biasing of the wind-up roller means in the belt retraction direction,

a liquid medium disposed in front of the propellant charge means,

ignition means for igniting the propellant charge means, and

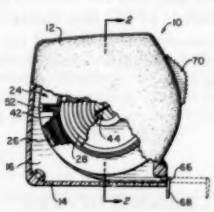
a rotor means coupled with the wind-up roller means,

whereby, after the igniting of the propellant charge means by the ignition means, the liquid medium drives the rotor means to cause an elimination of the belt looseness.

4,142,693
COILABLE RULE

Frank G. Czerwinski, East Berlin, Conn., assignor to The Stanley Works, New Britain, Conn.

Filed Oct. 5, 1977, Ser. No. 839,495
Int. Cl.[2] B65H *75/48*
U.S. Cl. 242—107 3 Claims



1. In a coilable rule having a housing provided with a mouth for passing a resilient measuring blade, a center post mounted on the housing, and a recoil spring for retracting the blade into a coiled position within the housing, a spool for supporting the measuring blade and recoil spring comprising:

a circular rim having a pair of upstanding flanges at its opposite sides to define an outer, annular space therebetween for receiving the coiled measuring blade;

a side wall portion on one side of said rim adapted to be journalled on the center post to support said spool for rotation to the housing;

said side wall portion and said rim providing an inner, annular space around the center post for receiving the recoil spring;

said rim having an opening formed therein to allow a free end of the recoil spring to extend therethrough for connection to the measuring blade, with the other end of the recoil spring being anchored to the center post;

said flange on the opposite side of said rim having an outwardly extending slit which extends completely therethrough and joins said opening in said rim;

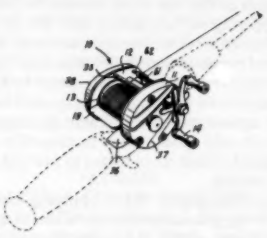
said opening in said rim comprising a rectangular window centrally located on said rim with a slot extending from said window and connecting with said slit; and

the end of the spring being notched adjacent to the free end thereof to provide a necked-down portion, with the notches spanning the side walls of the window to secure the free end of the spring to the spool.

4,142,694
BAIT CASTING FISHING REEL

Marvin L. Rankin, Jr., 3909 Wedgeway Dr., Fort Worth, Tex. 76133

Continuation of Ser. No. 314,499, Dec. 13, 1972, abandoned, which is a continuation of Ser. No. 74,009, Sep. 12, 1970, abandoned. This application Feb. 14, 1974, Ser. No. 442,386
Int. Cl.[2] A01K *89/02*
U.S. Cl. 242—211 3 Claims



1. A bait casting reel of the type adapted to be mounted on a fishing rod comprising:

reversely rotatable spool means adapted to receive a length of fishing line wound thereon and being rotatable in a first direction during casting to unwind line therefrom and being rotatable in a second direction after casting to rewind the line thereon,

spool shaft means rotatably supporting said spool means about a spool axis of rotation extending generally transversely to the longitudinal axis of the fishing rod,

first and second housing means axially spaced at opposite ends of said spool shaft means and defining a cavity therebetween having an outer peripheral configuration generally corresponding to the outer peripheral configuration of said housing means,

said spool means and the fishing line wound thereon being mounted entirely within said cavity on said spool shaft means,

manually operable spool drive means mounted on one of said housing means,

clutch means in one of said housing means operable to drivably connect and disconnect said drive means and said spool shaft means,

clutch operating means on said reel comprising:

clutch control shaft means rotatably movable between a first position whereat said clutch means drivably connects said drive means and said spool shaft means and a second position whereat said clutch means disconnects said drive means from said spool shaft means,

bearing means in each of said housing means rotatably supporting said clutch control shaft means with the central axis of rotation thereof extending generally parallel to said spool shaft means,

said clutch control shaft means extending into and across said cavity and being located entirely within said cavity in relatively closely spaced relationship to the line wound on said spool means,

rotatable cam means in one of said housing means operably connected to one end of said shaft means and having a central axis of rotation coaxial with said central axis of rotation of said clutch control shaft means and being operable by rotation of said clutch control shaft means in a first direction to disengage said clutch means during casting and being operable by rotation of said clutch control shaft means in a second opposite direction to re-engage said clutch means after casting,

thumb engageable force applying control surface means mounted on said clutch control shaft means including a first outer surface portion extending generally radially outwardly of said central axis of rotation of said clutch control shaft means and being located at least in part within said cavity, and a second inner surface portion next adjacent the line on the spool being located above the central axis of rotation of said clutch control shaft means when in a fishing position on a fishing rod and located entirely within said cavity and forming an extension of said first outer surface portion and located relative to the line on said spool means within a distance such as to enable a fisherman to simultaneously grasp the handle of the fishing rod with one hand and place the thumb of the one hand on said thumb engageable force applying surface means with the tip of the thumb being located in close enough proximity to the line on said spool means to permit simultaneous rotatable actuation of said clutch control shaft means by forces exerted by the thumb on said thumb engageable force applying control surface means and thumb tip engagement with the line on said spool means to manually control rotational speed of said spool means to prevent line backlash during casting,

said thumb engageable force applying control surface means being generally located, when in a fishing position on a rod, within the upper rear quadrant of said cavity and being generally upwardly facing therewithin and being movably tilted about the central axis of said clutch control shaft means during actuation of said clutch operating means substantially within the confines of said cavity,

said manually operable drive means comprising a pinion slidably axially movable on said spool shaft means,

said clutch means comprising a first clutch member extending axially from said spool means and a second clutch member carried by said pinion and shiftable axially relative to said first clutch member for driving engagement and disengagement relative thereto,

lever means for shifting said pinion and said second clutch member axially relative to said first clutch member,

said cam means comprising a first annular cam member fixedly mounted on said clutch control shaft means for rotation therewith and having an axially facing cam face, a second annular cam member fixed to said lever means and being guided on said clutch control shaft means for axial movement relative thereto and having an axially facing cam face confrontingly engaging the cam face of said first annular cam member for coacting camming engagement therewith,

means on said reel for preventing rotation of said lever means and said second cam member, and

spring means urging said lever means and said second cam member in a direction to effect engagement of the cam faces of said first cam member and said second cam member whereby manually induced rotational movement of said clutch control shaft means effects axial shifting of said lever means to disengage said first clutch member and said second clutch member, said spring means and said first cam member and said second cam member coacting to normally urge said clutch control shaft means to a position to be rotated by the thumb of the fisherman when placed on said force applying control surface means whereby said first clutch member and said second clutch member are disengaged when said clutch control shaft means is rotated by the fisherman and whereby said first clutch member and said second clutch member are reengaged upon removal of forces exerted on said clutch control shaft means by the thumb of the fisherman through said force applying control surface means.

4,142,695

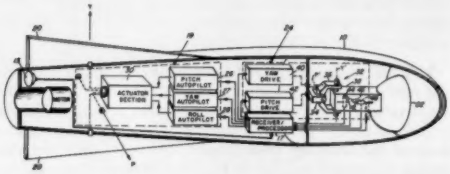
VEHICLE GUIDANCE SYSTEM

John A. Remmell, Sudbury; Frank Blitzer, Framingham; Robin L. Anderson, Sudbury, and Robert G. Dietrich, Acton, all of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Oct. 27, 1971, Ser. No. 193,012

Int. Cl.[2] **F41G** *7/14, 9/00, 7/00;* **F42B** *15/10*

U.S. Cl. 244—3.14 **5 Claims**



1. In a vehicle guidance system, wherein a vehicle is guided during a portion of flight towards a selected target in a command guidance mode and during another portion of the flight in a homing guidance mode, apparatus comprising:

(a) target tracking means, including a target tracking element carried by the vehicle, for generating guidance signals for the vehicle during the homing guidance mode;

(b) first means, affixed to the target tracking element, for sensing the inertial angular rates of such element about a pitch axis and a yaw axis;

(c) means, responsive to the first means, for gimballing the target tracking element with respect to the vehicle's body about the pitch axis and the yaw axis;

(d) second means, affixed to the target tracking element, for sensing the inertial angular rate of such target tracking element about an axis mutually orthogonal to the pitch axis and the yaw axis; and

(e) means, responsive to the first means and the second means, for stabilizing the attitude of the target tracking element at a known angular orientation during the command guidance mode.

4,142,696

GUIDANCE DEVICES

Ralph B. Nottingham, Towson, Md., assignor to Novatronics, Inc., Pompano Beach, Fla.

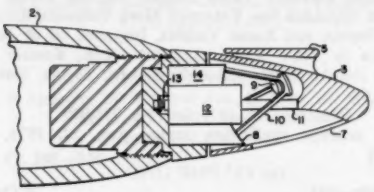
Filed Feb. 27, 1962, Ser. No. 176,141

Int. Cl.[2] **F42B** *15/02*

U.S. Cl. 244—3.16 **15 Claims**

1. In a missile guidance system, that improvement which comprises, a missile having a rotatable section, a fin on the section adapted to rotate the section as the missile passes through the air and to steer the missile when the cone section is braked, an optical slit on the section, an electrical generator

rotated by the section, means responsive to radiation from a target received by said slit to short the generator, thus providing a brake on the section so that the fin will steer the missile toward the source of radiation.



4,142,697

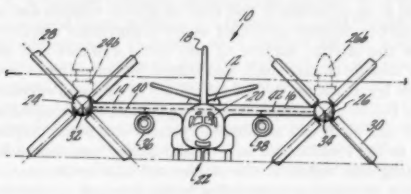
MECHANISM FOR SYNCHRONOUSLY VARYING DIAMETER OF A PLURALITY OF ROTORS AND FOR LIMITING THE DIAMETERS THEREOF

Evan A. Fradenburgh, Fairfield, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 759,287, Sep. 12, 1968, abandoned. This application Jul. 1, 1977, Ser. No. 812,309

Int. Cl.[2] F42B *27/28*

U.S. Cl. 244—7 R **24 Claims**



1. An aircraft having:
(a) two variable diameter rotors,
(b) first means to vary the diameter of the first rotor,
(c) second means to vary the diameter of the second rotor, and
(d) means interconnecting said first and second means so that the diameters of both rotors are substantially the same at all times.

4,142,698

IMPROVED AIRCRAFT SUSPENSION SYSTEM WITH MECHANISM OPERABLE TO ESTABLISH SYSTEM VERTICAL STIFFNESS AND DAMPING AND MECHANISM OPERATIONALLY INDEPENDENT THEREOF TO ESTABLISH SYSTEM ROLL STIFFNESS AND DAMPING

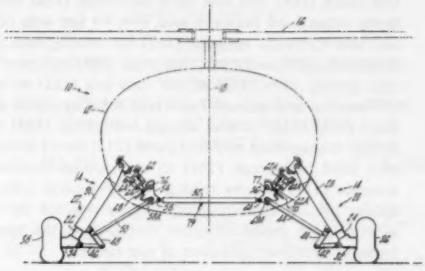
Charles F. Niebanck; Steven A. Klusman, both of Stratford, and Irwin J. Kenigsberg, Trumbull, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 3, 1976, Ser. No. 747,458

Int. Cl.[2] B64C *25/60*

U.S. Cl. 244—17.17 **4 Claims**

1. In a helicopter having a fuselage and a lifting rotor projecting from said fuselage for rotation about an axis of rotation to generate lift, the improvement of:
(A) a landing gear and suspension system connected to said fuselage and including,
(1) first means to establish system vertical stiffness and damping, and
(2) second means independent of said first means to establish system roll stiffness and damping
(B) wherein said first means establishes system vertical stiffness and damping sufficient to attenuate landing impact loads and wherein said second means establishes system roll stiffness and damping so that the helicopter roll mode frequency is well below the helicopter rotor normal operating rpm, and
(C) wherein said first means comprises:
(1) two wheel members on opposite sides of the fuselage,
(2) an oleo strut system connecting each wheel member to the fuselage,
(3) means pivotally connecting each oleo strut system to the fuselage,
(4) a lateral strut pivotally connected to each oleo strut system, and



(D) wherein said second means includes:
(1) a lateral member extending between and pivotally connected to the free ends of each lateral strut,
(2) link members pivotally connecting opposite ends of said lateral member in pivotal relation from said fuselage, said link members, and said lateral member cooperate to form a four-bar linkage, and
(3) spring and damper means operatively positioned between said lateral member and said fuselage to establish system roll mode stiffness and frequency.

4,142,699

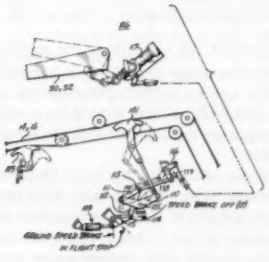
LATERAL CONTROL SYSTEM

Willard D. Arnquist, Bellevue; Thomas G. Foster, Kirkland, and Melvin J. Roalsvig, Seattle, all of Wash., assignors to Boeing Commercial Airplane Company, Seattle, Wash.

Filed Feb. 4, 1977, Ser. No. 765,519

Int. Cl.[2] B64C *13/30*

U.S. Cl. 244—83 K **2 Claims**



1. In combination in an aircraft having inboard spoilers on respective sides of the aircraft and a lateral control system including an aileron cable control system for differentially operating inboard ailerons on respective sides of the aircraft;
linkage means coupled between said aileron cable control system and said inboard spoilers on respective sides of the aircraft for symmetrically raising said inboard spoilers on said respective sides of the aircraft in response to differential operation of said inboard ailerons on respective sides of the aircraft, said linkage means including:

a first rocker arm (101);
a first bell crank (110) rotating about a first point (105);
a first link (111) having a second point (113);
a second link (112);
a second bell crank (115) having a third point (114);
a third bell crank (116); and,
a hydraulic actuator (117);
said first rocker arm (101) coupled to said aileron cable control system, said hydraulic actuator (117) associated with one of said inboard spoilers (30,32), and said first bell crank (115), and said third bell crank (116) operatively connected between said first rocker arm (101) and said hydraulic actuator (117) for rotating said first bell crank (110) about said first point (105) and carrying said second point (113) of said first link (111) as constrained by said second link (112) rotating about said third point (114) of said second bell crank (115) and further transmitting said first point (113) travel through said third bell crank (116) to said spoiler hydraulic actuator (117) thereby raising said respective inboard spoiler (30,32) approximately twenty degrees for full aileron cable travel in either direction in the speed-brake-off mode of operation of the aircraft.

4,142,700

ARRANGEMENT FOR OPTIMIZING THE RUNNING SPEED OF A TRACK-BOUND VEHICLE

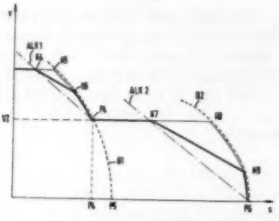
Helmut Ubel, Stuttgart, Fed. Rep. of Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Jul. 14, 1977, Ser. No. 815,627

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1976, 2631540

Int. Cl.² B61L *3/16*

U.S. Cl. 246—182 B **3 Claims**



1. An arrangement for optimizing the running speed of a track bound vehicle whose movement is normally determined by an automatic control system preassigning a speed and a braking curve and which is accelerated up to said preassigned speed at a predetermined rate or with maximum propulsion power comprising:

an additional circuit carried by said vehicle to calculate a predetermined point on a coasting initiation curve from data communicated to said vehicle and to switch off propulsion power of said vehicle when the actual speed of said vehicle exceeds said predetermined point;

said additional circuit including

first means coupled to a first potential representing a target distance and a second potential representing a target speed, said first means producing at its output a third potential representing said predetermined point, and

second means coupled to said output of said first means and a fourth potential representing the actual speed of said vehicle, said second means switching off propulsion power of said vehicle when said fourth potential exceeds said third potential.

4,142,701

SUPPORT DEVICES FOR AUTOMOBILE ENGINE

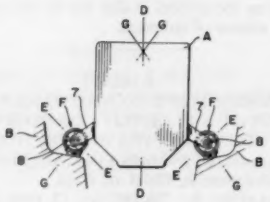
Yuichi Fujii, Okazaki; Yasuo Suzuki, Nagoya; Rikizo Yoshikawa; Kiyokazu Seo; Katsunori Mori; Yasunobu Kikuchi, all of Toyota, and Kazuo Yoshida, Inuyama, all of Japan, assignors to Tokai Rubber Industries Ltd., Komaki and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Mar. 18, 1977, Ser. No. 778,979

Claims priority, application Japan, Aug. 12, 1976, 51-107840[U]

Int. Cl.² F16F *15/00*

U.S. Cl. 248—544 **6 Claims**



1. Devices for supporting an automobile engine comprising a buffer composed of a metal shaft, a metal hollow cylinder arranged so as to surround said shaft in spaced relation and an elastic rubber member provided under compressed condition between the interior surface of said metal cylinder and the exterior surface of said shaft, said elastic rubber member having three leg portions, two of which are in opposed relationship, for forming directions having higher and lower rigidities between said shaft and said metal cylinder at a plane perpendicular to the longitudinal axis of said buffer; and means for connecting said buffers to the engine and to a car body, said means for connecting each buffer being attached so that the coextensive line to the direction having said higher rigidity extends through said two opposed leg portions and intersects the vertical plane through the center of gravity of said engine at a position below the intersection of the coextensive direction having said lower rigidity with said vertical plane, and said buffers being attached symmetrically to the car body in laterally spaced relation.

4,142,702

GAS DISCHARGE LASER DEVICE

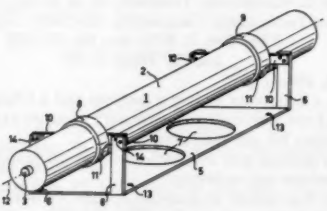
Theodorus F. Lamboo, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 8, 1977, Ser. No. 804,721

Claims priority, application Netherlands, Apr. 22, 1977, 7704397

Int. Cl.² H01S *3/02*

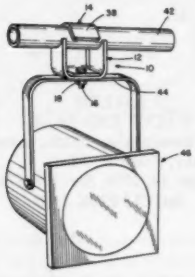
U.S. Cl. 248—174 **10 Claims**



1. A gas discharge laser device comprising a tubular gas discharge laser having a longitudinal axis, a holder, at least two pairs of bifurcated leaf springs connected to said holder, each pair of leaf springs being located in a plane substantially at right angles to the longitudinal direction of the gas discharge laser, and two clamping bands provided around the laser and

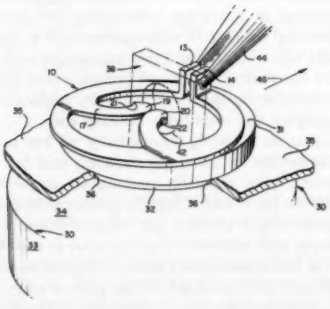
attached to each of said leaf springs on either side of said laser through both bifurcations of each leaf spring, each band thereby forming an assembly with one pair of leaf springs.

4,142,703
BRACKET ASSEMBLY
Jose P. Moretto, 284 W. First Ave., El Paso, Ill. 61738
Filed Dec. 27, 1977, Ser. No. 864,533
Int. Cl.[2] F16M *13/00*
U.S. Cl. 248—214 **9 Claims**



1. A bracket assembly adapted to be fastened to at least one rod shaped frame member of a framework, said bracket assembly comprising a U-shaped plate member having a flat bight portion with an opening therethrough and first and second leg portions, at least said first leg portion being concave at the outer end thereof, a generally C-shaped plate member having a flat bottom portion, a flat upright intermediate portion extending from one edge of said bottom portion and a curved portion extending from said intermediate portion, said bottom portion having an opening therethrough adapted to be aligned with said opening in said bight portion and means received through said openings for fastening said members together, to the at least one rod member, and, if desired, to a lamp assembly.

4,142,704
COMPRESSOR MOUNT CLIPS
Ronald A. Murray, Methuen, Mass., assignor to TRW Inc., Cleveland, Ohio
Filed Jan. 19, 1978, Ser. No. 870,914
Int. Cl.[2] F16M *13/00*
U.S. Cl. 248—680 **12 Claims**



1. An integral fastener formed of a spring material and comprising

a generally flat ring interrupted to present spaced apart ends, tool-engageable means at said ring ends, said means being squeezable together to reduce the spacing of said ring ends, and

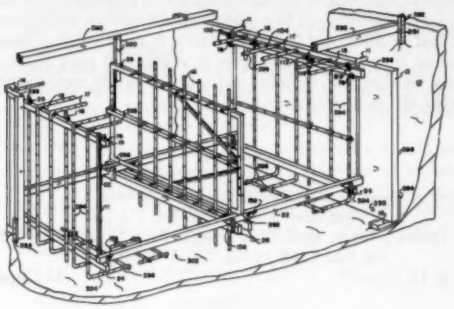
a pair of like hooked arms projecting oppositely inward from said ring and having

spaced apart ends extending towards said ring ends,

the reducing of the spacing of said ring ends closing said hooked arms from the normal spacing of their said ends, and

said hooked arms spring-opening, upon the releasing of said tool-engageable ring end means, to said normal spacing of their said ends.

4,142,705
MEANS OF CONSTRUCTION OF CONCRETE CULVERTS
C. B. Miller, 2403 Glenn St., SW., Huntsville, Ala. 35801
Filed Jul. 11, 1977, Ser. No. 814,560
Int. Cl.[2] E04G *9/00*
U.S. Cl. 249—188 **6 Claims**



1. For use in a form system for the construction of concrete culverts, a bracket for a beam supporting reinforcement bars, said bracket comprising:

first and second connectible links forming an adjustable-in-length rod;

an L-shaped member connected at an upper end region of said rod and oriented to form with a length of said rod a vertically reversed U, whereby said rod may be vertically supported by the horizontal top edge of a vertical outer side wall form panel for the pouring of a side wall of the culvert;

first and second horizontally extending, vertically spaced, arms on a side of said rod opposite to that of said L-shaped member and adapted to support a said beam extending normal to and between said arms;

spacing means between said horizontally extending arms for spacing a said beam from said rod; and

locking means connected to one of said horizontally extending said arms for locking a said beam against horizontal movement;

whereby said beam is held at a fixed distance from a said side wall form panel, and thereby reinforcement rods supported by said beam are held at a fixed space from said side wall form panel.

4,142,706
AUTOMATIC SAMPLE CHANGER HAVING PLANAR TRANSPORT SURFACE
Anthony A. Mueller, Florence, Ky., assignor to Actus, Inc., Florence, Ky.
Filed Jul. 12, 1977, Ser. No. 814,907
Int. Cl.[2] G01T *1/00*
U.S. Cl. 250—328 **13 Claims**

1. An apparatus for automatically conveying a plurality of samples supported by a puck chain to a detection zone, and for individually studying the characteristics of such samples, the

apparatus comprising: a base; a planar top assembly mounted on said base and forming the upper surface thereof; an elevator opening in said top assembly for permitting said samples to enter the confines of said base; detector means mounted within said base and in alignment with said elevator opening; elevator means within said base and in alignment with said elevator opening, for sequentially transporting said samples from said top assembly to said detector means, and for returning the

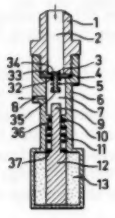
same to said top assembly; drive means on said top assembly adjacent said elevator opening, said drive means including a sprocket having teeth for associating with pucks of said puck chain to sequentially pull said samples into alignment with said elevator opening; and first guide means following the contour of said sprocket; said first guide means, in a first position, being spaced from said sprocket so as to enable said puck chain to pass between said sprocket and said first guide means while being driven by said sprocket.

4,142,707

VALVE ARRANGEMENT

Curt A. Bjorklund, Box 99, Ulricehamn, Sweden

Filed Mar. 2, 1977, Ser. No. 773,730
Claims priority, application Sweden, Mar. 15, 1976, 7603251
Int. Cl.[2] F16K *31/02, 31/08;* **B65D** *25/40*
U.S. Cl. 251—77 **16 Claims**



1. A device for insertion between the outlet of a fluid pump and the fluid inlet to a burner nozzle, said device comprising in combination

(1) a fluid chamber having bottom, side and top walls that are all stationary,

(2) a fluid inlet in the top of said fluid chamber, said fluid inlet being adapted to be connected to a pump,

(3) a fluid outlet in a sidewall of said fluid chamber, said fluid outlet being adapted to be connected to a burner,

(4) a valve member in said fluid inlet, said valve member having one end that extends downwardly through the top wall of said fluid chamber and into the interior of said fluid chamber,

(5) a piston member having one end that extends upwardly through the bottom wall of said fluid chamber, said one end of said valve member and said one end of said piston member being axially aligned with each other and establishing a space that varies in volume depending upon the relative movement of the two ends,

(6) a magnetic core attached to one end of said piston member, and

(7) a magnetic solenoid surrounding said magnetic core, said valve member and said piston member being mounted so that they cooperate to sequentially:

(a) unseat said valve member so that fluid can flow through said fluid inlet, and

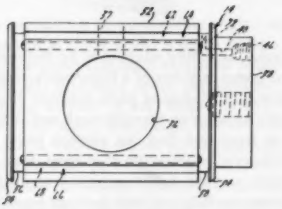
(b) seat said valve member when fluid flow is no longer desired and suck back a limited amount of fluid from said fluid outlet into said fluid chamber by virtue of the withdrawal of a portion of the piston member from said fluid chamber.

4,142,708

VALVE AND SEAL

Warren D. Brown, Birmingham, Mich., assignor to Sprayton Equipment Company, Franklin, Mich.

Filed Apr. 14, 1976, Ser. No. 676,909
Int. Cl.[2] F16K *5/00*
U.S. Cl. 251—317 **12 Claims**



1. A plug type valve structure for selectively permitting or preventing the flow of a cementitious material between a source of supply and discharge means comprising:

a main body housing:

inlet means disposed on said main body housing;

outlet means disposed on said main body housing;

a generally cylindrical valve core member movably retained within said main body housing and adapted to allow said cementitious material to flow between said inlet means and said outlet means when in a first predetermined position and to prevent said flow when in a second predetermined position;

a plurality of longitudinally extending spaced apart grooves disposed on said valve core;

a replaceable elongated bar sealing means disposed in each of said grooves and adapted to slidingly engage said main body housing in a sealing relationship for preventing circumferential leakage of said cementitious material between said valve housing and said valve core, each of said elongated bar sealing means comprising a noncompressible core member having a relatively flat surface continuously engaging said main body housing and

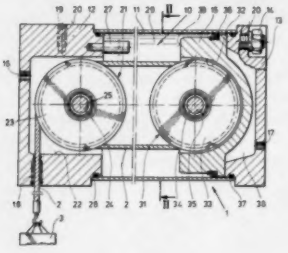
resilient means surrounding substantially all but said relatively flat surface of said core member, said bar sealing means being of a generally rectangular cross-sectional shape and having a width slightly greater than the width of said groove so as to place said resilient means in sealing engagement with sidewalls of said groove to thereby limit seepage of said cementitious material therebetween and a height greater than the depth of said groove whereby said resilient means are operative to maintain and continuously urge said elongated bar sealing means into engagement with said main body housing as said elongated bar sealing means become worn; and

a plurality of annular sealing means adapted to prevent axial leakage between said valve core and said valve housing.

4,142,709
HOIST

Willi Giessler, Winterthur-Wulflingen, Switzerland, assignor to Mifago AG, Liechtenstein

Filed Dec. 16, 1977, Ser. No. 861,341
Claims priority, application Fed. Rep. of Germany, Dec. 20, 1976, 2657768
Int. Cl.[2] B66D *1/00*
U.S. Cl. 254—168 5 Claims

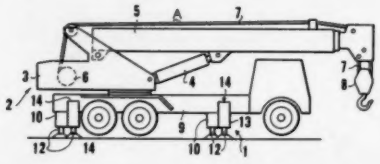


1. A hoist, comprising a housing, a first pulley set comprising a plurality of first pulleys rotatably mounted in said housing at a fixed location in said housing, a piston mounting member in said housing in sealing engagement with the walls thereof, a second pulley set of a plurality of second pulleys rotatably mounted in said piston mounting member, a rope trained around the pulleys of said first and second pulley sets and having a load-carrying end extending out of said housing, and drive means connected to said piston mounting member to move said piston mounting member backwardly and forwardly in said housing relative to said first set of pulleys to raise and lower the load-carrying end of said rope, said housing having a wall with a pressure-tight lead therethrough, said rope extending through said pressure-tight lead from said second set of pulleys.

4,142,710
AUTOMATIC EXTENSION CONTROL SYSTEM FOR JACKING DEVICE

Toru Okuda, Marugame, Japan, assignor to Tadano Ltd., Kagawa, Japan

Filed Nov. 28, 1977, Ser. No. 855,465
Claims priority, application Japan, Dec. 1, 1976, 51/145141
Int. Cl.[2] B66F *7/26*
U.S. Cl. 254—86 H 4 Claims



1. Extension control system for a jacking device for a traveling loading machine having a pressure oil source and tank comprising

at least four means comprising oil hydraulic jacks simultaneously all for supporting and elevating the traveling loading machine, each of said jacks having a hydraulic cylinder and a piston therein defining extension and retraction chambers on opposite sides of the piston, respectively,

conduit means for communicating said chambers on opposite sides of the piston in said hydraulic cylinder of each of said jacks with the pressure oil source and the tank, respectively,

a directional control valve for selectively changing communication between the pressure oil source, the tank and said chambers of each said hydraulic cylinder into an extending or retracting communication, respectively, of said piston and said jack,

a shut-off valve provided in a portion of the conduit means connected to said extension chamber of said hydraulic cylinder of each said jack, respectively, constituting means when actuated for closing communication between said extension chamber and said pressure oil source,

sensing means for continuously sensing tilt of the traveling loading machine while said jacks elevate said traveling loading machine and for generating a first signal upon sensing a tilted condition of the traveling loading machine,

means for actuating said shut-off valves, respectively, said means for actuating the shut-off valves for operatively actuating the shut-off valve for the jack in a higher side only when the traveling loading machine tilts and said sensing means generates said first signal, said actuating means for opening said shut-off valve of said jack in said higher side when a level condition of the traveling loading machine is regained,

a stroke-end sensing means for each said jack for operatively generating a second signal upon actuation thereof when the associated said jack extends to a stroke-end position, and

means for stopping pressure oil communication to said extension chamber of said hydraulic cylinders of all said jacks by actuating all said shut-off valves when at least one of said stroke-end sensing means is actuated to generate said second signal, thereby to stop the elevation of the traveling loading machine

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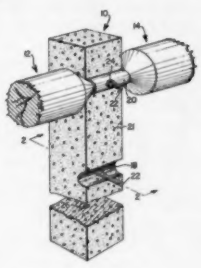
4,142,711
FENCE AND FENCE POST WITH REMOVABLE RAIL RETAINING BRACKET

Rulon W. Brimhall, 773716 W., Provo, Utah 84601

Filed Nov. 7, 1977, Ser. No. 849,476
Int. Cl.[2] E04H *17/00*
U.S. Cl. 256—65 1 Claim



1. A fence post for supporting fence rails having:

(a) said post being rectangular in horizontal cross-section;

(b) a plurality of similar arcuate recesses in one face of said post spaced one above the other;

(c) said recesses extend from one edge from said post to the other edge of said post;

(d) a plurality of equal diameter cylindrical sleeves positioned in each of said recesses and each having its axis perpendicular to the longitudinal axis of said post;

(e) said recesses having a depth of at least one-half the width of said sleeve;

(f) a plurality of bolts secured in said post perpendicular to said longitudinal axis of said post and parallel to each other, extending outwardly through said recesses and substantially beyond said one face of said post, and each centrally positioned in its respective recess;

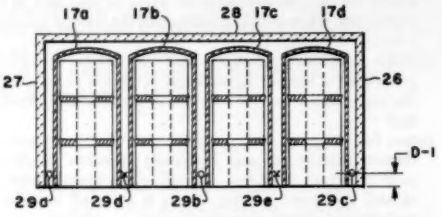
(g) said sleeves being substantially equal in length and being in length substantially the width of said post;
(h) said sleeves having cooperating bolt holes on opposite sides thereof and positioned on said bolts;
(i) means for removably securing said sleeves on said bolts and for maintaining said sleeves in their respective recesses when supporting said fence rails; whereby
(j) said fence rails are form fitted into the end of said sleeves and surroundingly supported thereby.

4,142,712

METHOD AND APPARATUS FOR EFFECTING UNIFORM HEAT TRANSFER IN AN INDUSTRIAL FURNACE

Klaus H. Hemsath, Sylvania, Ohio, and Frank J. Vereecke, Palmyra, Mich., assignors to Midland-Ross Corporation, Cleveland, Ohio

Filed Jun. 30, 1977, Ser. No. 811,747
Int. Cl.[2] F27B *11/00*
U.S. Cl. 266—44 **9 Claims**



1. A furnace for effecting heat transfer with injected gases and having a plurality of "n" work items comprising:
a base;
an outer furnace cover having a pair of generally parallel sidewalls, including one sidewall and an opposite sidewall, a pair of generally parallel end walls and a roof, said outer cover sealingly secured to said base to define a heat transfer enclosure;
said work items being arranged on said base in a row along an axis generally parallel to said sidewalls, each work item spaced laterally apart from one another a lateral distance with each end item in said row spaced laterally away from an associated end wall a lateral distance, said laterally spaced distances totalling n + 1 spaces and numbered consecutively from either end wall; and
jet pump means effecting heat transfer in a substantially uniform manner with all surfaces of each work item, said jet pump means including a plurality of high momentum jet nozzles adapted to discharge gases at high velocity in one of said sidewalls, each nozzle aligned along a jet axis generally perpendicular to said row axis and approximately bisecting an associated lateral distance, said nozzles adapted to fire their gases in alternate lateral spaces.

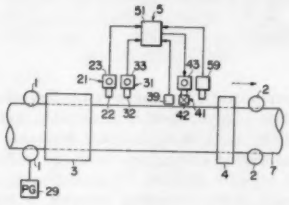
4,142,713

METHOD OF HEAT-TREATMENT OF WELDED PIPE AND APPARATUS THEREFOR

Hajime Nakasugi, Kisarazu; Tsurugi Kimura, Kimitsu; Teruo Tanimoto, Kisarazu, and Tsutomu Sakimoto, Kimitsu, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 634,327, Nov. 21, 1975, abandoned. This application May 16, 1977, Ser. No. 797,116
Claims priority, application Japan, Dec. 26, 1974, 49/136512
Int. Cl.[2] C21D *9/14*
U.S. Cl. 266—87 **5 Claims**

1. In a heat treatment apparatus for continuously heating and cooling welded pipe having a reinforcement weld bead therealong as the pipe is travelling in the direction of its axis, said apparatus having an induction heating device for heating the welded pipe so rapidly to a desired temperature that the weld might not be heated up to the same temperature as the remainder of the pipe at the time of the initial heating of the pipe and a cooling device arranged along the direction of the axis of the pipe, the improvement comprising, between said heating device and said cooling device in the recited order:
(a) a bead position detector for detecting the position of said bead;
(b) a first temperature difference detector for detecting the temperature difference between the bead and the material of the remainder of the pipe;
(c) a gap detector for detecting the gap between the bead and the bead heater;
(d) a bead heater connected to said temperature difference detector for locally heating the bead for reducing the temperature difference between the bead and the remainder of the pipe when the detected temperature difference is greater than an allowable temperature difference which allowable temperature difference will not adversely affect the quality of the heated pipe; and



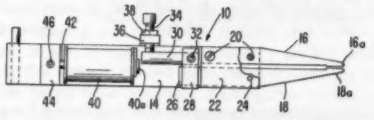
(e) a second temperature difference detector for detecting the temperature difference between the bead and the material of the remainder of the pipe for feedback of such a detected temperature difference; said improvement further comprising:
(f) a bead heater position controlling means to which said bead position detector and said gap detector are connected and on which said bead heater is mounted for placing the bead heater as close as possible to the bead in response to signals issuing from said bead position detector and said gap detector; and
(g) a power supply control means to which said two temperature difference detectors are connected and which is connected to said bead heater for adjusting the output from the bead heater so as to make the temperature difference between the bead and the remainder of the pipe smaller than allowable limit in response to signals issuing from said temperature difference detectors.

4,142,714

WIRE CLAMP

John C. Diepeveen, 1737 Kimberly Dr., Sunnyvale, Calif. 94086

Filed May 12, 1978, Ser. No. 905,310
Int. Cl.[2] B25B *11/00*
U.S. Cl. 269—8 **10 Claims**



1. A wire clamp comprising: a support; a pair of wire-clamping jaws mounted on the support, one of the jaws being movable relative to the other jaw; a magnet secured to one of the jaws, said support having a projection thereon, the magnet being attracted to the projection to hold said one jaw away from the other jaw to open the wire-receiving gap therebetween; and means adjacent to the magnet for creating a magnetic field having a magnitude and direction sufficient to cause

the magnet to move away from the projection to move said one jaw toward the other jaw to clamp a wire in said gap.

4,142,715

FLUID FILLED AMUSEMENT DEVICES UTILIZING FLUID MOTION

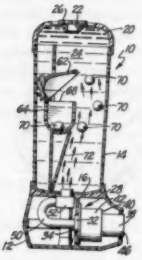
Takao Matsumoto, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan

Filed Oct. 28, 1977, Ser. No. 846,552

Claims priority, application Japan, Nov. 4, 1976, 51-148206[U]

Int. Cl.[2] A63F *9/00*

U.S. Cl. 273—1 L **8 Claims**



1. An amusement device including a container at least a part of which is transparent, a body of transparent fluid located within said container, at least one object located within said body of fluid, said object being visible from the exterior of said container, and pump means for circulating said fluid within said container so that movement of said fluid within said container will cause movement of said object within said body of fluid in which the improvement comprises:

a target means for retaining said object as said device is used, said target means being located within the interior of said container so as to be visible from the exterior thereof,

at least part of said target means being movably mounted within said container so as to be capable of moving with respect to the interior of said container during the operation of said device,

said pump means having a port located so as to be capable of directing a current of fluid generally toward said part of said target means so that the pressure of said current against said part will cause movement of said part as said pump means is operated so as to eject fluid through said port,

said part being located so that the position of said part resulting from the operation of said pump means affects the relative difficulty of moving said object so that it is retained by said target means.

4,142,716

GAMES

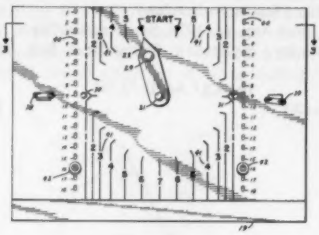
John W. Howard, Jr., 825 NW. 70th St., #3, Miami, Fla. 33150

Filed May 23, 1977, Ser. No. 799,352

Int. Cl.[2] A63F *9/00*

U.S. Cl. 273—1 R **4 Claims**

1. An amusement game comprising, a vertically oriented support surface, a body freely rotatably supported on said surface at a pivot axis, said body having its center of gravity positioned remote from said pivot axis, an indicator secured to said body and rotatable therewith, scoring indicia on said support surface and radially positioned about said pivot axis and symetrically positioned on opposite sides of an imaginary vertical line through said pivot axis, and at least two means for manual actuation by users of the game for individually engaging said body to prevent rotation thereof, whereby said body may be manually rotated to a position with said center of gravity located above said pivot axis and to either side of said vertical line, released to rotate about said pivot axis by the



force of gravity, and manually stopped with said indicator adjacent a selected one of said scoring indicia.

4,142,717

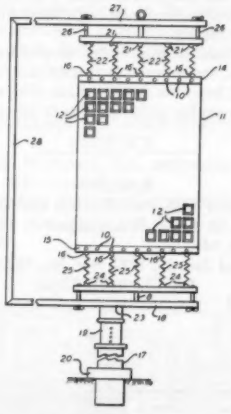
BATTING PRACTICE MAT

Ernest Monaco, 325 Hillside Ave., Nutley, N.J. 07110

Filed Dec. 20, 1977, Ser. No. 862,565

Int. Cl.[2] A63B *69/40*

U.S. Cl. 273—26 R **6 Claims**



1. A batting practice mat comprising,

(a) A support means,

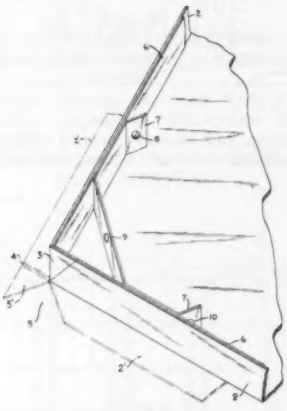
(b) a generally rectangular sheet having attachment means vertically suspending said sheet in a generally vertical plane to said support means,

(c) a plurality of tapered apertures in said sheet, the maximum size of said apertures being slightly smaller than the diameter of a ball having a conventional size,

(d) said sheet being deformable at least around said apertures to frictionally engage a ball,

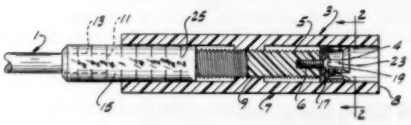
(e) a ball being frictionally engagable with an aperture in said sheet such that a batter positioned on the side of said sheet where the tapered holes are smallest can strike a ball to practice batting strokes.

4,142,718
TABLE TENNIS TABLE
Franz Luckey, Thayngen, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland
Filed Aug. 16, 1976, Ser. No. 714,716
Claims priority, application Switzerland, Sep. 10, 1975, 11752/75
Int. Cl.[2] A63B 71/04
U.S. Cl. 273—30 5 Claims



1. A weatherproof table tennis top, comprising in combination:
a flat top plate composed of a flat thermoplastic core sheet and two flat metal facing sheets, the plate having a top surface serving as a playing surface,
a plurality of rim portions integral with said top plate and subtending a predetermined angle therewith for imparting a box-shape thereto,
a steel frame fitted within the box-shaped top plate and said rim portions, and secured to at least said rim portions, and
a plurality of brackets fitted within said steel frame and secured thereto for receiving legs to be connected to said brackets.

4,142,719
GOLF TEE INSERTION DEVICE
Frank X. Blood, St. Louis, Mo., assignor to The ZIT Corporation, St. Louis, Mo.
Filed Jan. 25, 1977, Ser. No. 762,773
Int. Cl.[2] A63B 57/00
U.S. Cl. 273—33 10 Claims

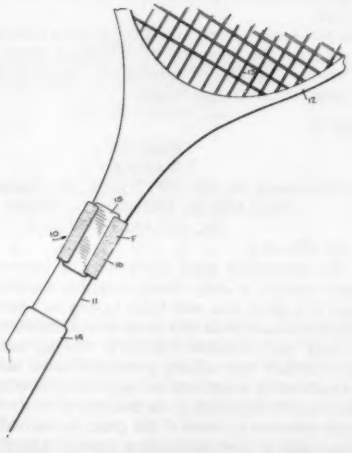


1. A device for facilitating the placing of a golf tee in the ground, said device comprised of a hollow golf tee holder head defined by a head chamber and shaft head, the shaft having the tee holding head axially affixed by fastener means to a terminal end, the tee holding head comprised of a rod having a first end portion axially affixed to the terminal end of the shaft and a second end portion having a bearing surface head contoured substantially to the recessed upper surface of a standard golf tee, said second end portion terminating in an affixed head portion comprised of three or more equally spaced apart spring arm elements, each spring arm element being positioned in a cutout in a wall which define said head chamber, said elements having interior gripping surfaces conforming to the shape of the upper cross section of a standard golf tee head, said spring arm elements extending from the rod outer diameter surface of the bearing surface head, said rod having machine screw threads on an exterior portion accommodating a sleeve having matching machine screw threads, said sleeve axially moveable along the rod exterior.

4,142,720
BILLIARD BALL
Frank E. Davis, 3103 Westador Dr., Arlington, Tex. 76105
Continuation-in-part of Ser. No. 823,040, Aug. 9, 1977, abandoned. This application Jun. 16, 1978, Ser. No. 916,282
Int. Cl.[2] A63B 37/02
U.S. Cl. 273—59 A 13 Claims

1. A billiard ball adapted for playing either pocket billiards or snooker and having magnetically attractable characteristics such that it may be utilized on pool tables where separation of a scratched cue ball from the object balls may be accomplished by use of a magnet, comprising:
a spherical ball of non-magnetic cured resinous material, with the nominal diameter of said ball being within the range of 2⅛ to 2¼ inches and the weight being within the range of 142 to 190 grams, and said ball having magnetically attractable material distributed throughout the ball with such uniformity that its anisotropy factor is not more than 10 percent as the ball rotates about any of its axes.

4,142,721
WEIGHT AND BELT ASSEMBLY
George Faleck, 201 E. 21st St., New York, N.Y. 10010, and Alvin Solomon, 2 West End Ave, Brooklyn, N.Y. 11235
Filed Jun. 1, 1977, Ser. No. 802,465
Int. Cl.[2] A63B 49/04
U.S. Cl. 273—73 R 5 Claims



1. In combination with a tennis racquet, a weight and belt

assembly which is strappable at a selected position along the shaft of said tennis racquet to modify the balance thereof, said assembly comprising:

A a flexible belt having a buckle loop attached to one end and a tab attached to the other end thereof;

B a fabric fastener having a male component formed on substantially the entire outer surface of the tab and a female component formed on substantially the entire outer surface of the belt whereby the belt may be strapped about the shaft by slipping the tab through the loop and folding it over to bring about engagement between the male and female components at a point along the outer surface of the belt causing the belt to tightly hold the shaft without flapping of the tab regardless of the width of the shaft; and

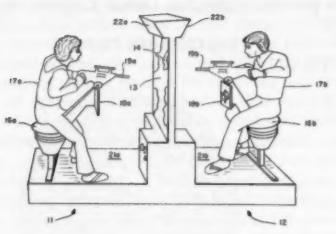
C a weight attachable to said belt, said weight being constituted by a generally rectangular plate whose width is no greater than the width of said shaft at the selected position thereon, said plate having a pair of longitudinally extending parallel slots through which said belt is threaded to hold said plate against one side of said shaft while said loop is held against the other side thereof.

4,142,722

SEAT MOUNTED SIMULATED WEAPON AND TARGET SHOOTING GAME

John V. Romano, and Roger D. Hector, both of San Jose, Calif., assignors to Atari, Inc., Sunnyvale, Calif.

Filed Jan. 30, 1978, Ser. No. 873,143
Int. Cl.[2] A63F *9/02*; F41F *27/00*; F41J *9/00*
U.S. Cl. 273—101.1 **6 Claims**



1. An electronic shooting game for use on a support surface comprising: a pair of seats; means coupled with each seat, respectively, for mounting the same on the support surface for movement relative to the support surface and to the other seat; a gun carried by each seat respectively, each gun having means for directing a beam of electromagnetic radiation toward the other seat; a target carried by each seat respectively, the target of each seat being comprised of electronic photodectector structure, capable of being struck and thereby energized by a radiation beam from the gun of the other seat; means between and spaced from the guns for forming a number of spaced obstacles to the radiation beams emitted by said guns; and circuit means coupled with the photodetector structure of the target of each seat for providing a display representing the actuations of the photodetector structure when struck by radiation beams from the gun of the other seat.

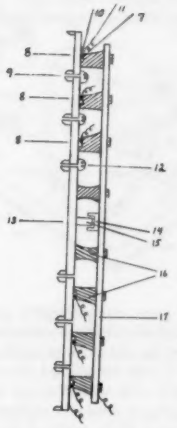
4,142,723

TARGET WITH DIGITAL RECORDER

George A. Rief, P.O. Box 184, Dannebrog, Nebr. 68831

Filed Jun. 6, 1977, Ser. No. 804,067
Int. Cl.[2] F41J *5/04*
U.S. Cl. 273—102.2 R **2 Claims**

1. A target assembly comprising an impact receiver target and a corresponding target recorder, said impact receiver target comprising a circular central impact disc and a plurality of concentric conductive, impact rings adapted to be struck by a projectile; a backing plate; said impact rings being secured to said backing plate by annular, resilient, insulating members; said insulating members being nearly co-extensive with said impact rings; said insulating members having a first portion secured directly to the backing plate and impact ring and a second portion also secured to the backing plate but spaced from said impact ring; said second annular portion having an annular electrical contact strip imbedded therein which is connected to one of a first set of wires leading to the target



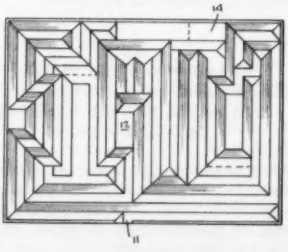
recorder; the impact receiver target having a second set of wires leading to the target recorder which are connected to the impact rings; wherby when a projectile strikes the impact rings the annular, resilient, insulating members are compressed such that the annular contact strip contacts the impact ring thereby completing an electrical circuit to the target recorder and causing a digital indication to appear on the target recorder indicative of the particular impact ring which is struck.

4,142,724

WATER MAZE GAME WITH SUPER-HYDROPHOBIC SURFACE

Franklin G. Reick, Westwood, N.J., assignor to Michael Ebert, Mamaroneck, N.Y., a part interest

Filed Apr. 30, 1976, Ser. No. 682,146
Int. Cl.[2] A63F *7/04*
U.S. Cl. 273—109 **3 Claims**

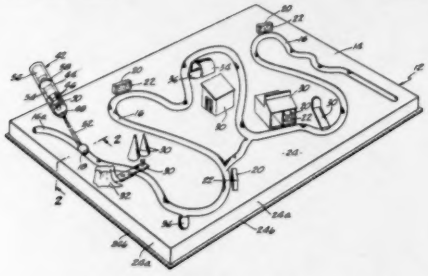


1. A toy or game device comprising a playing board formed by a substrate having a face layer thereon formed by super-hydrophobic material having virtually no force of adhesion with respect to water whereby a drop of water supported thereon assumes a substantially spherical form, and a material consisting essentially of water on said layer to create a substantially spherical body movable on said board, said board being a maze having channels forming a circuitous path which is traversed by said body.

4,142,725
PNEUMATIC GAME WITH FABRIC INTERENGAGING ELEMENTS

Bruce R. Gilbert, 1230 N. Flores St., Los Angeles, Calif. 90069, and Jack P. Hall, 2306 Manning Ave., Los Angeles, Calif. 90064

Filed Jun. 20, 1977, Ser. No. 808,304
Int. Cl.[2] A63F 7/04; A63H 29/16
U.S. Cl. 273—123 A **3 Claims**



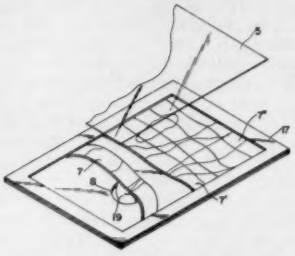
1. A pneumatic game comprising in combination:
(a) a game board providing a substantially planar surface having formed therein in an elongated, tortuous raceway:
(b) a plurality of objects affixed to said planar surface in close proximity with said tortuous raceway, each of said objects exhibiting at least one surface facing said raceway and comprising a fabric material having a multiplicity of outwardly protruding interengaging means;
(c) a substantially spherically shaped member exhibiting an outer surface having a multiplicity of outwardly protruding interengaging means adapted to disengageably interlock with said interengaging means provided on said surface of said objects, one of said interengaging means provided on said surface of said objects and said surface of said spherically shaped member being hook-textured and the other of said surfaces being loop textured, said member being configured to rollably engage said raceway; and
(d) impeller means for producing a collimated stream of air which can be directed against said spherical member to propel it along said raceway, said impeller means comprising:
(1) a hand held, hollow housing having an air inlet and a forwardly extending air outlet nozzle;
(2) a propeller means rotatably mounted within said housing intermediate said air inlet and said air outlet nozzle for drawing air into said housing through said air inlet and ejecting it through said air outlet nozzle; and
(3) means for rotating said propeller.

4,142,726
FRAMED PICTURE PUZZLE

John S. Anderson, Manor Hill Farm, Glenarm, Md. 21057

Filed Jun. 30, 1977, Ser. No. 811,864
Int. Cl.[2] A63F 9/10
U.S. Cl. 273—157 R **7 Claims**

1. A jigsaw type picture puzzle and retainer frame combination permitting the picture puzzle to be stored in the frame and viewed therein in assembled form, comprising, a set of picture puzzle pieces of predetermined thickness that in assembly together form a picture of predetermined outer dimensions and thickness, said retainer frame comprising three laminated layers, namely a backing member, an intermediate spacing member substantially the thickness of said puzzle pieces, and an upper member comprising a border member, said spacing member defining an aperture larger than said viewing aperture to thereby form a ledge between the border member and backing member, the border member being affixed in place to the frame and defining a picture viewing aperture of smaller dimensions than that of the assembled picture with the ledge thereunder substantially registering with said assembled picture dimensions, the backing member being affixed in said frame, the ledge having a depth to said backing member substantially registering with the picture puzzle pieces thickness, at least those of the puzzle pieces that fit around the outer edge

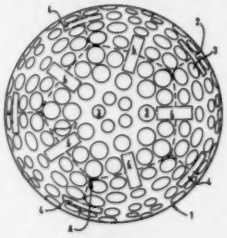


of the picture having a resiliency and shape that permit bending for fitting into and removing from under the ledge so that the picture may be assembled and disassembled into the retainer frame.

4,142,727
GOLF BALLS

Michael Shaw, Widnes, and Robert C. Haines, Huddersfield, both of England, assignors to Dunlop Limited, London, England

Filed Aug. 20, 1976, Ser. No. 716,348
Claims priority, application United Kingdom, Sep. 6, 1975, 36794/75
Int. Cl.[2] A63B 37/14
U.S. Cl. 273—232 **6 Claims**



1. A golf ball in the shape of a sphere having in its surface from 240 to 480 dimples of circular plan form, the dimples having diameters in the range of 0.085 to 0.150 inches and 30 bald patches symmetrically distributed over the surface of the sphere, the configuration of the dimples being substantially the same in each of those twelve regions of the surface of the sphere which are defined by lines formed by projecting onto the surface the edges of a regular dodecahedron whose vertices lie in the surface of the sphere and the configuration being such that said 30 bald patches are symmetrically disposed over the surface of the ball, a bald patch being located at the midpoint of each edge of the dodecahedron, a bald patch being any region on the surface of the ball of such a size that it is possible to draw on it a spherical rectangle having a width of at least half of the mean dimple diameter and a surface area of at least twice the mean dimple area but not exceeding a maximum defined by the conditions that it is not possible to draw on the bald patch:
(i) a square having sides whose length is greater than twice the mean dimple diameter; or
(ii) a rectangle having a width of at least half the mean dimple diameter and an area of more than eight times the mean dimple area,

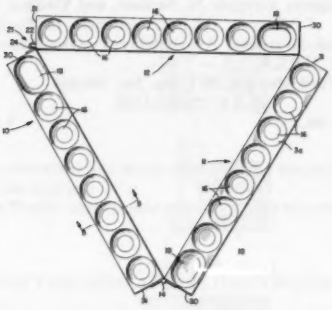
said rectangle and square for determining the minimum and maximum sizes not enclosing any dimple or part thereof.

4,142,728

MANCALA GAME BOARD ASSEMBLY

Agapito P. Balduman, 2709 Edfeldt Dr., District Heights, Md. 20028

Filed Aug. 31, 1977, Ser. No. 829,431
Int. Cl.[2] A63F *3/00*
U.S. Cl. 273—242 **3 Claims**



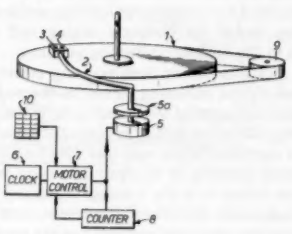
1. A mancala game board assembly comprising first, second and third separately formed, elongated rectangular game boards of like construction, each of said game boards having (a) first and second spaced apart ends, (b) flat parallel side walls extending between said first and second ends, (c) an array of upwardly opening playing pockets for receiving mancala game pieces and all arranged in a single row that extends in the direction in which the game board is elongated such that a plane medially intersecting the game board medially intersects said pockets, (d) the pocket at one end of said row being disposed immediately adjacent to said first end and being larger than the remaining ones of the pockets in said row to act as the goal pocket in playing the mancala game, and (e) said remaining ones of said pockets being uniformly configured and being uniformly spaced apart along the portion of the game board that extends between said goal pocket and said second end, the number of said pockets in the row of each of said boards being the same and pre-selected, and said mancala game board assembly further comprising first means pivotally securing said first end of said second board to said second end of said first board for enabling pivotal displacement of said second board between first and second angularly spaced apart positions and for locating said first end of said second board immediately adjacent to said second end of said first board when said second board is in either one of said first and second angularly spaced apart positions, said second board being angularly spaced apart from said first board by at least an acute angle when pivoted to said second position, and said first and second boards lying in parallel side-by-side abutting relationship with each other when said second board is pivoted to said first position, the row of said pockets on said second board being parallel to the row of said pockets on said first board when said second board is in said first position, said second end of said second board lying immediately adjacent to said first end of said first board when said second board is in said first position, then first end of said first board and said second end of said second board being the free relatively movable ends of said first and second boards, and second means detachably pivotally securing one of the ends of said third board to a pre-selected one of the free ends of said first and second boards for enabling pivotal displacement of said third board to a position where the other of the ends of said third board contacts the free end of the other one of said first and second boards when said second board is in said second position to form a triangle in which said first end and said goal pocket of said third board lies immediately adjacent to said second end of said second board, in which said first end and said goal pocket of said first board lies immediately adjacent to said second end of said third board, and in which said first end and said goal pocket of said second board lies immediately adjacent to said second end of said first board, whereby a three sided mancala game board is formed for game participation by three players, and said third game board being selectively removable from said triangle for enabling said second board to be moved to said first position for game participation by two players.

4,142,729

GRAMOPHONE EQUIPMENT

Harold M. McLennan, Kinnesswood, Scotland, assignor to Pico Electronics Limited, Glenrothes, Scotland

Filed Nov. 29, 1977, Ser. No. 855,592
Claims priority, application United Kingdom, Nov. 30, 1976, 49947/76
Int. Cl.[2] G11B *3/38, 17/06;* H01J *39/12;* G06K *7/10*
U.S. Cl. 274—9 RA **7 Claims**



1. A record player comprising:

a turntable;

a tone arm having a pick-up;

record track selection means for selecting a track of a record to be played by the player;

sensing means for scanning across a record on said turntable to produce a signal representing the record reflectivity thereby to identify bands of relatively low groove density separating recoded tracks of a record;

control means for causing the sensing means to effect a first and a second scan of a record on said turntable, the first to assess record reflectivity and the second to identify the band immediately preceding the track selected by said record track selection means;

means for causing the pick-up to engage with the band identified during the second scan; and

processing circuitry for processing the signal of the sensing means and having means for analysing the signal of the sensing means during the first scan to obtain a measure of the peaks of said signal and means for adjusting at least one of the gain value and threshold value of the circuitry during the second scan in dependence upon said measure and in the sense tending to compensate for the variations which occur between records in the amplitude levels of said signal.

4,142,730
LOADING AND UNLOADING MECHANISM FOR RECORD DISK APPARATUS

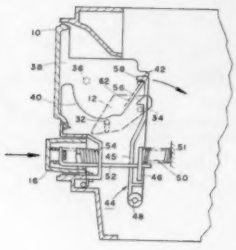
Martin W. Hynd, Glenrothes; James M. O'Reilly, Tillicoultry, and Alexander S. Murison, Kirkcaldy, all of Scotland, assignors to Burroughs Corporation, Detroit, Mich.

Filed Oct. 1, 1976, Ser. No. 728,698

Claims priority, application United Kingdom, Oct. 3, 1975, 40493/75

Int. Cl.[2] G11B *5/82*

U.S. Cl. 274—9 B **4 Claims**



1. Loading and unloading apparatus for a disk recording and reproducing unit, comprising:

A. a housing means including a disk insertion aperture means;

B. disk receiver means including receiver pivoting means;

C. first pivotal mounting means, connected to said housing, and cooperating with said receiver pivoting means, for enabling said disk receiver means to pivot from an operative position to a loading/unloading position;

D. spring means for biasingly urging said disk receiver means to the loading/unloading position;

E. door means including door pivoting means;

F. second pivotal mounting means, connected to said housing, and cooperating with said door pivoting means, for enabling said door means to pivot back and forth from a closed condition when said disk receiver means is in the operative position, to an open condition when said disk receiver means is in the loading/unloading position;

G. locking means for reieasably securing said disk receiver means in the operative position against the biasing action of said spring means;

H. releasing means for actuating said locking means to release said disk receiver means to move, under the biasing action of said spring means, to the loading/unloading position;

I. cam means mounted on said door means, and cam-follower means for engaging said cam means, said cam-follower means mounted on said disk receiver means, said cam means and cam-follower means for together enabling said disk receiver means to apply the rotation-producing force on said door means to pivot said door means from the closed condition to the open condition when said disk receiver means is moved by said spring means to the loading/unloading position, and for together enabling said door means to pivot said disk receiver means from the loading/unloading position to the operative position when said door means is pivoted from the open condition to the closed condition.

J. said disk receiver means including receiver side extension means, mounted on said disk receiver means, for carrying said cam-follower means, said receiver side extension means including receiver engagement means for cooperating with said locking means to releasably secure said disk receiver means in the operative position;

K. said locking means including door retention means for releasably securing said door means in its closed condition when said disk receiver means is in its operative position, said door retention means also being released when said releasing means is actuated; and

L. said door means including door side extension means, mounted on said door means, for carrying said cam means and for carrying said door pivoting means, said door side extension means including door engagement means for cooperating with said door retention means to releasably secure said door means in the closed condition.

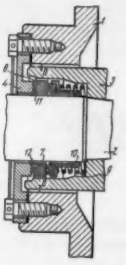
4,142,731
END-TYPE SEAL

Andrei N. Filippov; Alexandr N. Nechaev, and Vladimir I. Sokolsky, all of Moscow, U.S.S.R., assignors to Tsentralny Nauchno-Issledovatelsky Avtomobilny I Avtomotorny Institut Nami, U.S.S.R.

Filed May 13, 1977, Ser. No. 796,664

Int. Cl.[2] F16J *15/34*

U.S. Cl. 277—96.1 **1 Claim**



1. An end-type seal comprising a casing; a gland mounted in said casing; a sealing ring made from a graphite-containing material, having face surfaces and urged in use against said gland; annular ridges of equal height and trapezoidal in configuration on the face surface of said sealing ring facing said gland, said annular ridges tightly bearing against the surface of said gland until they are worn down to allow said sealing ring to come into close mating contact with said gland, each of said annular ridges being in the form of an isosceles trapezoid in cross section, with a larger base on said face surface of said sealing ring, the sides of said trapezoid being inclined to said larger base at an angle ranging from at least 45° to 75°, the height of the trapezoid equalling 0.75 to 1.0 the width of its smaller base, and the overall area of the smaller bases for all said annular ridges accounting for greater than 0.025 and up to 0.25 the area of said surface of the sealing ring.

4,142,732
HAND TRUCK

Arthur C. Boyd, 53-1/2 S. Bates, Akron, Ohio 44303

Filed Aug. 23, 1977, Ser. No. 827,101

Int. Cl.[2] B62B *5/02*

U.S. Cl. 280—5.26 **10 Claims**

1. In combination with a hand truck having elongate frame members and opposed wheel bearing plates journaled on an axle carried by said frame members the improvement comprising;

(A) disc means fixed to the axle;

(B) rotation inhibiting means carried by the axle in at least partially encircling and normally non-contacting relationship with said disc means;

(C) actuating means

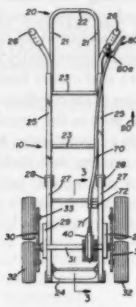
(1) carried by one of the frame members and

(2) attached to said rotation inhibiting means

(3) for drawing said rotation inhibiting means into frictional engagement with said disc means; and

(D) said rotation inhibiting means including

(1) a mounting bracket carried by the axle for limited



movement in a plane normal to the longitudinal axis of the axle and

(2) flexible band means secured to said mounting bracket.

4,142,733

DRAFT SENSING APPARATUS FOR USE WITH TRACTORS

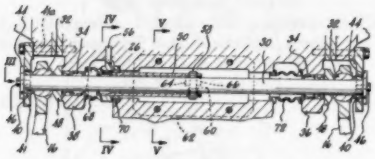
Giancarlo Bernini, Fabbrico, Italy, assignor to Massey-Ferguson Services N.V., Curacao, Netherlands Antilles

Filed Oct. 7, 1977, Ser. No. 840,409

Claims priority, application United Kingdom, Oct. 9, 1976, 42077/76

Int. Cl.[2] B60D *1/00*

U.S. Cl. 280—446 A **9 Claims**



1. The combination of a tractor and a draft load sensing apparatus comprising a bar extending transversly across the tractor and supported at spaced locations thereon, a pair of draft links pivotally connected to opposite end portions of the bar so that draft loads imposed on the links cause flexing of the bar, a tube rotatably mounted on the bar and extending therealong, draft load signalling means attached to the tube and rotatable therewith, and means interconnecting the tube with the tractor so that flexing of the bar, caused by the imposition of draft loads, results in rotation of the tube and hence the signalling means about the bar.

4,142,734

CROSS COUNTRY PLATE SKI BINDING

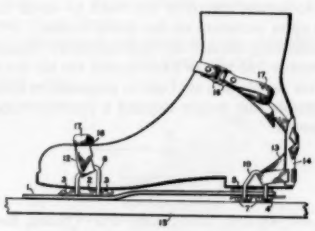
Richard P. Bentley, Box 786, Tupper Lake, N.Y. 12986

Filed May 27, 1977, Ser. No. 801,330

Int. Cl.[2] A63C *9/02*

U.S. Cl. 280—615 **3 Claims**

1. A binding comprised of a uni-flexible sole plate extending the length of the wearer's foot, said sole plate firmly attached with screws or other fasteners to a ski or other equipment at the forward end of the sole plate, toe brackets, one on each side of the foot at the toe, each toe bracket formed from a single piece of substantially smooth wire, each said wire toe bracket formed with a portion beneath the toe at the forward end of said sole plate, and a raised portion extending up alongside the toe, each said raised portion providing a straight portion of wire around which is looped a strap closure equipped toe strap that passes over the top of the toe and connects the toe bracket raised portions on opposite sides of the toe, said straight portion of wire inclined downward from rear to front alongside the toe at an angle matching the lay of said looped toe strap, and said raised straight portions on opposite sides of the toe forwardly converging, said wire toe bracket portion beneath the toe comprising the two end portions of said single piece of substantially smooth wire, said two wire end portions spaced apart and parallel to each other, and extending transverse to the length of said sole plate beneath the toe, each said wire end portion clamped, together with a corresponding wire end portion from the wire toe bracket on the opposite side of the toe, between said sole plate and a channel in a toe clamp plate, said toe clamp plate channels, two in number, dimensioned to hold two wire end portions from opposite toe brackets against said sole plate, parallel, overlapping, and adjacent to each other, each said toe clamp plate channel shaped to exert a frictional clamping force along a single line of contact on each toe bracket wire end portion, said line of contact positioned along the length of each side of said channel at a depth into the channel slightly greater than half the toe bracket wire diameter, said clamping force between sole plate and toe clamp plate upon said toe brackets generated by screws or other tightenable fasteners, said wire toe brackets laterally adjustable by means of loosening said screws or other tightenable fasteners, heel brackets, one on each side of the foot at the heel, each heel bracket formed from a single piece of substantially smooth wire, each said wire heel bracket formed with a portion be-



neath the heel at the rear end of said sole plate, and a raised portion extending up alongside the heel, said wire heel bracket raised portion providing a section of wire around which is fastened one end of a strap closure equipped heel strap, the free end of said heel strap passing up behind the heel, over the top of the foot, and down around behind the heel to a point of fastening around a section of wire on the heel bracket raised portion of the opposite wire heel bracket, said wire heel bracket portion beneath the heel comprising the two end portions of said single piece of substantially smooth wire, said two wire end portions spaced apart and parallel to each other, and extending transverse to the length of said sole plate beneath the heel, each said wire end portion clamped, together with a corresponding wire end portion from the wire heel bracket on the opposite side of the heel, between said sole plate and a channel in a heel clamp plate, said heel clamp plate channels, two in number, dimensioned to hold two wire end portions from opposite heel brackets against said sole plate, parallel, overlapping, and adjacent to each other, each said heel clamp plate channel shaped to exert a frictional clamping force along a single line of contact on each heel bracket wire end portion, said line of contact positioned along the length of each side of said channel at a depth into the channel slightly greater than half the heel bracket wire diameter, said clamping force between sole plate and heel clamp plate upon said heel brackets generated by bolts or other tightenable fasteners connecting said sole plate to said heel clamp plate, said wire heel brackets laterally adjustable by means of loosening said bolts or other tightenable fasteners.

4,142,735
SAFETY SKI BINDING

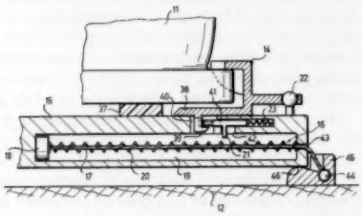
Peter Biermann, Warmbronn, and Brigitte Sittmann, Stuttgart, both of Fed. Rep. of Germany, assignors to Vereinigte Baubeschlagfabriken Gretsch & Co. GmbH, Fed. Rep. of Germany

Filed Jun. 16, 1976, Ser. No. 696,685

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1975, 2526822

Int. Cl.[2] A63C *9/08*

U.S. Cl. 280—618 **33 Claims**



1. A safety ski binding comprising:

extensible line means for interconnecting a ski boot and a ski,

restoring force means acting on said extensible line means to force said extensible line means toward a position holding the ski boot in an in-use position on the ski while permitting relative movement of the boot and ski caused by skiing forces, accompanied by extension of the extensible line means which remains connected between the boot and ski to assure return of the boot to its in use skiing position upon cessation of the skiing forces,

and disconnecting means for automatically disconnecting the extensible line means from one of the ski boot and ski to separate the ski and ski boot in response to extension of the extensible line means beyond a predetermined maximum amount.

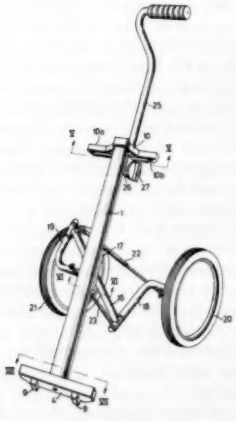
4,142,736
GOLF CART

Bo I. Ackerfeldt, Ascona, Switzerland; Curt Olsson, Bandhagen, and Carl-Göran Crafoord, Bromma, both of Sweden, assignors to Sikob Svensk Industris Konstruktions-Och Berakningskontor AB, Sollentuna, Sweden

Filed Nov. 3, 1976, Ser. No. 739,534

Int. Cl.[2] B62D *11/00*

U.S. Cl. 280—652 **11 Claims**



1. A golf cart comprising a supporting chassis assembly including a supporting center beam extending in the intended running direction of the cart, a wheel assembly including two wheel struts, said wheel assembly being rigidly attached to said center beam, and mounting means rigidly attached to said center beam for mounting individually and detachably two separate, self-contained golf bags, each having a size suitable for accommodating half a normal set of golf clubs, on opposite sides of said center beam substantially in the same plane as and substantially parallel to said center beam, said mounting means including a rigid bottom plate rigidly supported at the rear end of said center beam, as seen in the running direction of the cart, so as to be substantially perpendicular to the longitudinal direction of said center beam, the side surface of said bottom plate facing the fore end of said center beam being provided with two trough-shaped recesses located on opposite sides of said center beam and shaped for slidably and detachably receiving the lower end of one golf bag each.

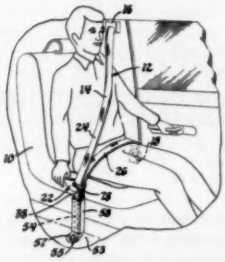
4,142,737
SEAT BELT SECURING DEVICE

Gerald J. Marsh, Warren; Kenneth H. Reid, Mt. Clemens, and William C. Jarski, Oxford, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 727,290, Sep. 27, 1976, abandoned. This application Aug. 8, 1977, Ser. No. 822,663

Int. Cl.[2] B60R *21/10*

U.S. Cl. 280—747 **7 Claims**



1. In a vehicle body seat belt system having one end of the belt anchored at one side of the seated occupant, and a loop of belt adapted for securement at the other side of the seated occupant, and a securing device at the other side of the seated occupant for releasably capturing the belt in a restraining position about the occupant, said securing device comprising:

mounting means on the vehicle body at the other side of the seated occupant;

a hook member having a forward opening belt receiving slot defining a lower mounting leg and an upper leg having a belt engaging portion for engaging the belt upon entry of the belt into the slot;

a pivotal mount acting between the mounting means and the mounting leg of the hook member and being located relative the belt engaging portion of the upper leg so that force applied against the hook member by the belt during restraint of the occupant by the belt maintains the belt engaging portion and belt receiving slot in a downwardly directed belt capturing position;

said hook member being pivotally movable to an upwardly directed belt releasing position upon manual pivoting effort applied thereto by the seated occupant to release the belt for movement from the restraining position.

4,142,738

BASE SHEETS FOR PRINTING WITH REACTIVE DYES

Wilfried Steinbach, Bergisch-Gladbach, Fed. Rep. of Germany, assignor to C. F. Wachendorff GmbH, Kradepohlsmuhle, Fed. Rep. of Germany

Continuation of Ser. No. 533,531, Dec. 17, 1974, abandoned. This application Feb. 2, 1977, Ser. No. 764,800

Claims priority, application Switzerland, Dec. 19, 1973, 17797/73

Int. Cl.[2] B41C *1/06;* B32B *7/00*

U.S. Cl. 282—27.5 10 Claims

1. A base sheet formed of material selected from the group consisting of paper, metal and plastic, suitable for use as a receptor sheet in a printing process employing a carrying sheet containing an alcoholic solution of a basic reactive dye, said base sheet being provided on at least one of its surfaces with a reactive pigment coating having a pH value of about 5 to 8 and, an alcohol resistance as determined by the alcohol drop test which is 50 to 70% of the reference value on a glass plate comprising an intimate mixture of

(a) two absorbent pigments of different absorption values, one pigment being highly absorbent and having an absorption coefficient, determined according to ASTM 281-31 of about 100 to 160 g./100 g., the other pigment being sparingly absorbent and having an absorption coefficient determined according to said ASTM 281-31 of about 40 to 60 g./100 g., said pigments being present in amounts of from about 30 to 80% of said highly absorbent pigment to about 70 to 20% of said sparingly absorbent pigment: and

(b) two binders of different solubilities, one binder being solvent-resistant and the other binder being alcohol-soluble, said binders being present in amounts of from about 50 to 80% of said solvent-resistant binder to about 50 to 20% of said alcohol-soluble binder.

4,142,739

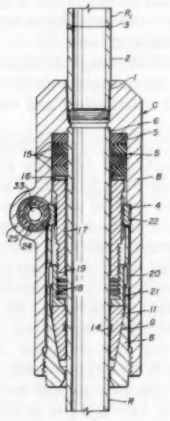
PIPE CONNECTOR APPARATUS HAVING GRIPPING AND SEALING MEANS

Lloyd E. Billingsley, Houston, Tex., assignor to Compagnie Maritime d'Expertise, S.A., Marseilles, France

Filed Apr. 18, 1977, Ser. No. 788,159

Int. Cl.[2] F16L *21/08*

U.S. Cl. 285—18 6 Claims



1. Apparatus for connecting a cylindrical first member to a second member comprising:

tubular body means adapted to receive one end of said first member and having means thereon for connecting said body means to said second member;

gripping means carried by said body means and movable from a radially expanded position, in which said one end of said first member may be axially received and displaced from said body means, to a radially contracted position gripping the exterior of said first member and preventing its axial displacement from said body means;

annular seal means carried by said body means and movable from a relaxed position in which said one end of said first member may be axially received therein, to a compressed position, sealingly engaging said one end of said first member;

sleeve means carried by said body means between said gripping means and said seal means and being axially extendable to simultaneously apply forces to said gripping means and said seal means for said movement to said contracted and compressed positions, respectively, said sleeve means comprising first and second threadedly connected sleeve members, one of which is non-rotatable but both of which are axially movable relative to said tubular body means to effect said extension of said sleeve means; and

rotating means carried by said body means engaging said rotatable sleeve member and operable externally of said body means for translating rotational movement thereof to axial movement of both of said sleeve members.

4,142,740

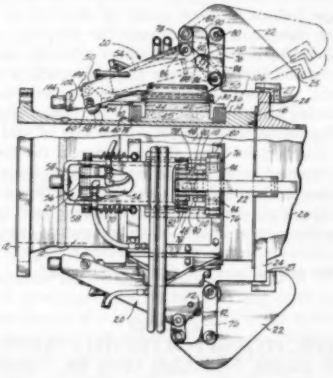
QUICK DISCONNECT COUPLER

Carl A. Wilms, La Habra, Calif., assignor to Ameron, Inc., Monterey Park, Calif.

Filed Aug. 12, 1977, Ser. No. 824,037

Int. Cl.[2] F16L *55/00*

U.S. Cl. 285—18 12 Claims

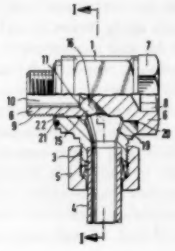


1. A quick disconnect coupler for connecting the flanged end of one pipe to a second pipe, the coupler comprising a plurality of jaw actuator units secured to the outside of the second pipe in circumferentially spaced positions, each unit including a support member anchored to a second pipe, a frame member movably supported on the support member for movement in a direction parallel to the axis of the pipe, a clamping jaw, two pair of linkage arms of different length pivotally connecting the jaw to the frame member, a pair of toggle arms pivotally connected to each other and respectively to the frame member and to the jaw, a linear actuator, one end of which is pivotally connected to the two toggle arms, and adjustable means connecting the other end of the actuator to the frame member and to the support member for moving the frame member relative to the support member when the actuator drives the toggle linkage.

4,142,741
PIVOTAL SCREWED FITTING

Othmar Fiala, Bielefeld, Fed. Rep. of Germany, assignor to Ermeto-Armaturen GmbH, Bielefeld, Fed. Rep. of Germany

Filed Mar. 15, 1977, Ser. No. 777,699
Claims priority, application Fed. Rep. of Germany, Mar. 15, 1976, 2610775
Int. Cl.[2] F16L *27/00*
U.S. Cl. 285—39 **12 Claims**

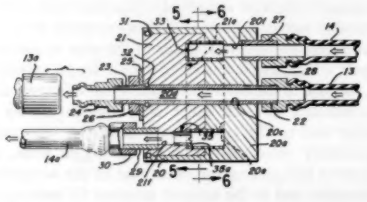


1. In a pivotal screwed fitting for joining pipes having a hollow body including nipple for attachment to the end of one of the pipes; the hollow body being adjustable about the axis of the coupling nipple; a hollow screw arranged in the hollow body and having a threaded portion to be screwed into another one of the pipes for tightening the hollow body to the last-named pipe; an annular channel defined together by a cylindrical outer face of the hollow screw and an enlarged inner face of the hollow body; an axial blind bore provided in the hollow screw; a plurality of ports provided in the hollow screw for maintaining communication between the blind bore and the annular channel and terminating with respective openings on the cylindrical outer face of the hollow screw; and a connecting passage defined by wall means of the hollow body for maintaining communication between the coupling nipple and the annular channel; the improvement wherein said passage widens from said coupling nipple in the direction of said annular channel; and said wall means defining said connecting passage having an at least approximately rotationally symmetrical configuration with respect to the axis of said coupling nipple of said hollow body, further wherein the axes of said ports are oriented at an oblique inclination to the axis of the hollow screw and intersect the axis of the hollow screw substantially in a single point and further wherein said axes of said ports constitute generatrices of an imaginary circular cone, whereby a low-resistance, turbulence-free passage of the liquid through the pivotal screwed fitting is provided.

4,142,742
SWIVEL FITTING FOR FLEXIBLE CONDUITS

Gerald W. Cornett, 781-1 Eagle Creek Rd., Valparaiso, Ind. 46383, and Kevin L. Cornett, 101 E. Westchester Ct., Chesterton, Ind. 46304

Filed Sep. 15, 1977, Ser. No. 833,443
Int. Cl.[2] F16L *39/04*
U.S. Cl. 285—136 **8 Claims**

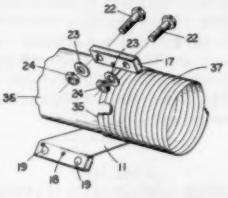


1. A swivel fitting for communication between the sections of a pair of conduits comprising one unit having centrally positioned bore means affording communication between the respective sections of one conduit, a second unit centered around said bore means to rotate in the first unit, the units having inter-end faces in contact, each end face formed with a facing annular recess centered as to the units, the recesses combining to form an annular channel, means on each unit connectable to the respective sections of the other conduit and passing through each respective unit into communication with the channel, means cooperating with said bore means and the outer surface of the second unit to retain said second unit within said first unit, and hollow sealing means positioned within said chamber and secured to the recess of one of said units so as to be rotatable therewith to prevent escape from the interior of the fitting of the fluid passing through the second conduit.

4,142,743
CLAMPING DEVICE

Lloyd E. McGowen, and Ernest E. Messick, both of West Lebanon, Ind., assignors to Tru-Flex Metal Hose Corporation, West Lebanon, Ind.

Filed Jan. 31, 1977, Ser. No. 764,372
Int. Cl.[2] F16L *25/00*
U.S. Cl. 285—177 **1 Claim**



1. In a means for connecting a pair of tubular members of different outside diameters;

a band of ductile metal initially of strip form having end portions and bent to cylindrical shape whereby the end portions are adjacent one another, said band surrounding the joint between said members and a substantial portion of the width of said band engaging each of said members in direct contact therewith; and

means circumferentially stressing said band and drawing the band into intimate engagement with the outer surfaces of said members, and maintaining said engagement when achieved;

the improvement which comprises said means for circumferentially stressing said band including a pair of notched, rigid, rectangular members secured to said band, each of rigid members being secured to said band at a respective one of said end portions, each of said rigid members having one notched longitudinal edge thereby forming two planar surfaces offset from each other and connected by an intermediate portion, said rectangular members each having another longitudinal edge, the planar surfaces being parallel to the other longitudinal edge, said rectangular member having one narrower end adjacent the tubular member with the larger outside diameter and one wider end adjacent the other tubular member, said rectangular members each having a pair of sides extending between said longitudinal edges, said band being folded around each rectangular member and contacting both longitudinal edges and both sides thereof;

said rectangular members each being secured to a respective end portion of said band by at least a pair of welds, said welds being located on both of said sides at the wider end of each rectangular member so as to provide four welded connections between each rectangular member and said band;

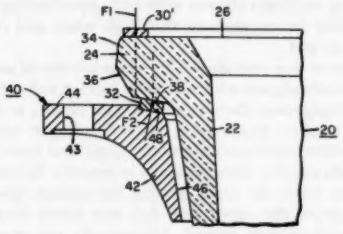
said rectangular members being disconnected from said band at the narrower end of said rectangular members.

4,142,744

METHOD AND APPARATUS FOR COUPLING TUBULAR MEMBERS

Christian M. M. Janssen Bennynck, Moret sur Loing, France, assignor to Corning Glass Works, Corning, N.Y.

Filed Oct. 20, 1977, Ser. No. 843,843
Int. Cl.[2] F16L *23/00*
U.S. Cl. 285—368 **4 Claims**



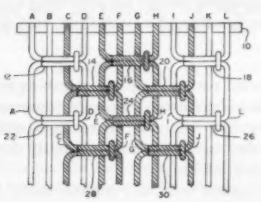
1. A coupling assembly joining flanged end portions of a pair of tubular glass members together in a sealed relationship for use in a delivery or processing system comprising, a pair of tubular glass members to be coupled, each said tubular member having a flanged end portion with a planar end surface positioned such that said planar end surfaces are substantially parallel to one another, a pair of collar members, each collar member surrounding an end portion of one of said flanged tubular glass members to be coupled and positioned rearwardly of said flanged end portion thereof, means for tightening said collar members in a clamping relationship for coupling said end portions together, means for preinducing stresses within tubular portions of said glass members of a desired magnitude and direction so as to minimize stresses exerted on such members during operation conditions of the system, and said stress inducing means including means for applying radially offset substantially axial forces to the flange portion of said tubular members so as to provide a torsional moment thereto and initially bow said tubular portions inwardly of said members with a preinduced deformation counter to the deformation exerted on said members during operating conditions.

4,142,745

METHOD OF MAKING SQUARE KNOT MACRAME

Anna W. Offik, 2027 Wooddale Dr., Huntsville, Ala. 35801

Filed Sep. 27, 1976, Ser. No. 727,296
Int. Cl.[2] D04G *5/00*
U.S. Cl. 289—1.5 **3 Claims**



1. A method of performing alternating square knot macrame using cord units of two colors comprising:

positioning a plurality of at least two cord units, cord units A and B, of a first color side by side;

positioning a cord unit C of a second color adjacent to said cord unit B;

positioning a cord unit D of said first color adjacent to said cord unit C;

positioning a plurality of cord units of said second color adjacent to said cord unit D, said last-named plurality including a cord unit E adjacent to said cord unit D, and a cord unit F adjacent to said cord unit E;

making a first square knot utilizing cord units A and D with cord units B and C extending through the center of said first square knot as filler cord units; and

making a second square knot utilizing cord units C and F with cord units D and E extending through the center of said second square knot as filler cord units;

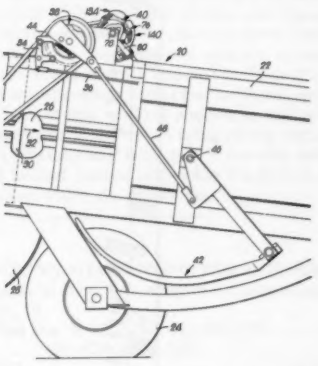
whereby a transition from one color to another in an alternating square knot pattern is achieved without leaving residual spots of one color in an otherwise solid pattern of an opposite color.

4,142,746

STRAND TYING MECHANISM

Allen A. White, Peabody, Kans., assignor to Hesston Corporation, Hesston, Kans.

Division of Ser. No. 742,178, Nov. 16, 1976, Pat. No. 4,074,623.
This application Sep. 15, 1977, Ser. No. 833,565
Int. Cl.[2] A01D *59/04*
U.S. Cl. 289—2 **5 Claims**



1. Tying mechanism for use in knotting a pair of strands together at two separate locations along the length of the strands so as to form a complete loop between the knots for binding a bale of crop material or the like, said mechanism including:

an intermittently operable drive shaft;

a single set of components operable during each cycle of operation thereof to make a single knot in the strands; and

means between said shaft and the components for driving the components through a pair of said cycles during each said operation of the shaft,

said driving means for the components being operable to effect the cycles of each pair thereof successively such that the knots formed during each corresponding pair of cycles are likewise formed successively.

4,142,747

DOUBLE-LOCKING ASSEMBLY FOR SLIDING GLASS CLOSURES

Robert W. Beck, 1406 S. Spruce, and John S. Duarte, 1410 S. Spruce, both of Santa Ana, Calif. 92704

Filed Aug. 29, 1977, Ser. No. 828,348
Int. Cl.[2] E05C *9/04, 9/14*
U.S. Cl. 292—37 **2 Claims**

1. In a closure assembly having, in combination, a casing, a closure fitted within said casing adapted for opening and closing by sliding horizontally, said closure including a glass por-

tion and a rectangular frame consisting of horizontal rails and vertical stiles around said glass portion, the improvement comprising:

(a) an actuator means attached to the inner side of a stile of said frame;

(b) an upper locking rod operatively connected to the actuator means and vertically aligned along said stile and extending from said actuator means upwardly toward the top portion of said casing;

(c) a lower locking rod operatively connected to the actuator means and vertically aligned along said stile and extending from said actuator means downwardly toward the bottom portion of said casing;

said upper and lower rods being positioned so that their axes are horizontally spaced apart from each other and lie in a plane parallel to the surface of said inner side of said stile;

(d) at least one upper guide means affixed to said inner side of said stile above said actuator means, said upper guide means being adapted to prevent transverse motion and to permit axial motion of said upper locking rod;

(e) at least one lower guide means affixed to said inner side of said stile below said actuator means, said lower guide means being adapted to prevent transverse motion and to permit axial motion of said lower locking rod,

each of said upper and lower guide means being identical in structure and positioned in opposite vertical orientation along said stile such that the upper edge of said upper guide means corresponds structurally with the lower edge of said lower guide means, each of said guide means comprising an L-shaped structure having a planar base portion affixed to said stile and a working portion connected to said base portion and extending perpendicularly away from said base portion,

said working portion having an aperture adapted to permit its corresponding locking rod to slide axially therethrough without significant transverse movement when said rod is moved by said actuator means, said aperture having a vertical axis lying in a plane which is perpendicular to said base portion and horizontally spaced apart from the vertical axis of said base portion, said corresponding locking rod being positioned through said aperture, and

the base portion of each of said guide means being sized such that when said actuator means is affixed to the stile at a position half way between the top and bottom edge of the stile, one end of the base portion of each said guide means is substantially abutting said actuator means and the base portion of the upper and lower guide means extend vertically along said stile such that the other ends of said base portions are substantially at the top and bottom edges, respectively, of said stile;

(f) an elongated fastener adapted to extend from said actuator means into said stile to secure said actuator means to said stile, and the base portions of said guide means are notched at the middle of the ends abutting said actuator means, such that when the upper and lower guide means are fastened to said stile, said notched ends abuts one another to form an aperture between them which encompasses said elongated fastener,

(g) an upper stop provided at the upper portion of said casing vertically aligned with said upper locking rod and adapted for engagement therewith when said closure is closed, and

(h) a lower stop provided at the lower portion of said casing vertically aligned with said lower locking rod and adapted for engagement therewith when said closure is closed,

said actuator means being adapted to impart solely axial motion simultaneously to the upper and lower locking rods to move them vertically in opposite directions such that when the upper locking rod extends upwardly it engages the upper stop and said lower locking rod simultaneously extends downwardly and engages the lower stop whereby the closure is double-locked, and when said upper locking rod retracts downwardly it disengages from the upper stop and said lower locking rod simultaneously retracts upwardly and disengages from said lower stop whereby said closure is unlocked.

4,142,748

DOOR FURNITURE

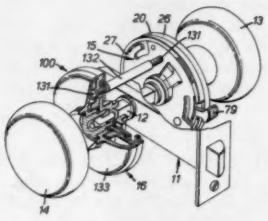
John L. Hook, Doncaster, Australia, assignor to Gainsborough Hardware Industries Pty. Limited, Canterbury, Australia

Filed Sep. 2, 1977, Ser. No. 830,077

Claims priority, application Australia, May 5, 1977, PC9995

Int. Cl.[2] **E05B** *55/04;* **E05C** *1/12, 1/16*

U.S. Cl. 292—169.15 **13 Claims**



1. A rotary coupling device for providing a rotary coupling between a door handle and a latch shaft, said device comprising:

a body;

first and second rotary coupling members mounted on the body so as to be rotatable about a common coupling axis which coupling members interengage with one another such that they can rotate independently through a limited angle of rotation only;

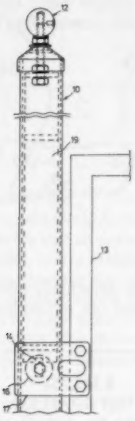
a locking member mounted on the body for movement between a locking position in which to lock the first coupling member against rotation about said coupling axis and a freeing position in which said first coupling member is freed for rotation about said coupling axis; and

locking member release means responsive to relative rotation of the coupling members to move the locking member from its locking position to its freeing position.

4,142,749
LATCH MECHANISMS FOR POOL GATES

Harold W. Heald, Kenthurst, and John W. Norcott, Wentworthville, both of Australia, assignors to Boral Cyclone Limited, South Melbourne, Australia

Filed Aug. 24, 1977, Ser. No. 827,531
Int. Cl.[2] E05C *1/06*
U.S. Cl. 292—189 2 Claims



1. A retaining mechanism comprising a striker to be attached to a gate and having a vertically extending barb on its leading portion, a latch to be located within the gate post, said latch being adapted to engage said barb to releasably retain the gate stationary with respect to the gate post, said latch including a vertically extending movable striker engaging member having at its lower portion projection means to engage the barb to retain the striker stationary with respect to the latch and an upwardly extending portion to be gripped by a user of the gate to raise said member enabling the release of said striker from within said latch, the other end of said movable member being located outside the gate post and remote from said latch, passage means in the gate post containing the latch to enable said striker to enter said latch, wherein said movable member is formed from metal strip and is shaped to engage the inner surfaces of the gate post within which it is to be located so as to be guided thereby to move in a vertical direction only, and said mechanism further includes a shield to be attached to the gate and supporting said striker so that when said striker is located in said latch said shield covers said passage means.

4,142,750
DOOR LATCH

Tetsuro Kagoura, Kurobe, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Mar. 28, 1977, Ser. No. 782,184
Claims priority, application Japan, Mar. 31, 1976, 51/38700[U]
Int. Cl.[2] E05C *3/14*
U.S. Cl. 292—210 9 Claims

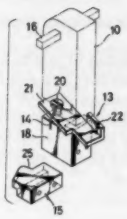
1. A latch for use on a door swingably mounted within a doorframe, comprising:

(a) a latch bolt structurally adapted to be mounted on the door for free pivotal movement about a horizontal axis between a latched position in which said latch bolt has a portion projecting out of the door into the doorframe for holding the door closed within the doorframe and an unlatched position in which said latch bolt portion is disposed in the door for permitting the door to be opened;

(b) a stop mount structurally adapted to be fixedly secured to the door;

(c) a stop member mounted on said stop mount in normally spaced relation to said latch bolt for pivotable movement about a vertical axis between (1) a working position wherein a portion thereof is in the path of said latch bolt portion for blocking said latch bolt portion against movement out of said unlatched position, and (2) a retracted position spaced from said latch bolt and from the path of said latch bolt portion for permitting said latch bolt to be moved freely between said latched and said unlatched positions without engaging said stop member;

(d) resilient means urging said stop member to pivot toward said working position; and

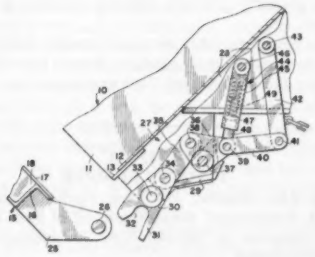


(e) an abutment structurally adapted to be mounted on said doorframe within the doorframe opening in spaced relation to the path of the latch bolt portion and engageable only with said stop member to cause it to move from said working position to said retracted position against the force of said resilient means in response to the door's being swung to a closed position within the doorframe, and it to be moved back to said working position by said resilient means in response to the door's being swung out of the doorframe; whereby said latch bolt is movable into and out of said latched position only when the door is in the closed position within the doorframe.

4,142,751
DOOR LOCKING MECHANISMS FOR HOPPERS

Eugene I. Varda, Saint John, Ind., assignor to Pullman Incorporated, Chicago, Ill.

Filed Dec. 8, 1977, Ser. No. 858,778
Int. Cl.[2] E05C *3/26*
U.S. Cl. 292—217 10 Claims



1. For a hopper structure having a sloped bottom wall terminating at a lower end in a discharge opening;

said hopper structure including a door hingedly connected thereto for swinging movement between open and closed positions relative to said discharge opening, the improvement of a locking mechanism comprising:

a keeper element on said door,

a bracket on said hopper connected to said sloping bottom wall,

a latch member having first and second ends, including a keeper receiving jaw at said first end thereof,

means mounting said latch member on said bracket for pivotal movement about a first horizontal axis,

a first link connected to said second end of said latch member for pivotal movement about a second horizontal axis parallel to and spaced from said first axis,

a bell crank lever mounted on said bracket for pivotal movement about a third horizontal axis spaced laterally from and being parallel to said second axis,

pivot means connecting said first link to said bell crank lever for movement about a fourth horizontal axis parallel to and spaced from said third axis,

a first toggle lever connected to said bell crank for pivotal movement about a fifth horizontal axis parallel to said fourth axis,

a second toggle lever pivotally connected to said first toggle lever,

biasing means connected to said bell crank lever urging said pivot means of said first link and fourth horizontal axis to an over-center position relative to a generally horizontal plane extending through said second and third horizontal axes wherein said keeper receiving jaw is in locking engagement with said keeper element to maintain said door in a closed position.

4,142,752

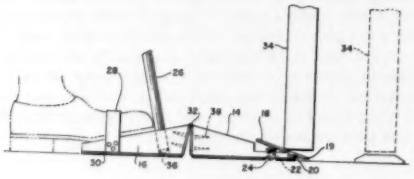
BURGLAR ENTRY STOP DEVICE

James O. Chilton, 590 Flora St., Laguna Beach, Calif. 92652

Filed Feb. 21, 1978, Ser. No. 879,332

Int. Cl.[2] E05C *17/54*

U.S. Cl. 292—343 **13 Claims**



1. A device for preventing entry through a door, comprising:

barrier means for stopping the door;

leverage means connected to said barrier means for positioning said barrier means beneath the door and for applying additional force against the door;

a plate pivotally mounted adjacent one end of said barrier means; and

plunger means movably mounted beneath said plate to said barrier means, said plunger means exerting pressure against the floor as said door exerts pressure against said plate.

4,142,753

VEHICLE BUMPER

Wolfgang Klie, Korntal; Wolfgang Fischer, Leinfelden, and Helmut Weisshappel, Sindelfingen, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 22, 1976, Ser. No. 743,928

Claims priority, application Fed. Rep. of Germany, Nov. 21, 1975, 2552184

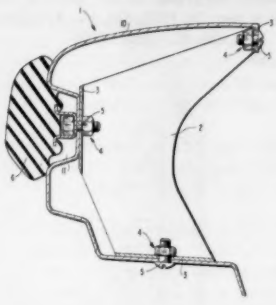
Int. Cl.[2] B60R *19/04*

U.S. Cl. 293—102 **16 Claims**

1. A vehicle bumper arrangement comprising:

a U-shaped profile member opening in a direction toward a vehicle, the U-shaped profile member being formed of sheet steel;

reinforcing means formed as a plurality of individual vertically upright ribs of a metallic material disposed completely within said U-shaped profile member, said individual ribs being spaced from one another with each rib connected to inner wall areas of each leg of the U-shaped profile member so as to interconnect and to reinforce said areas of each leg, each of said individual ribs extending in a longitudinal direction of the vehicle and being constructed as a substantially planar sheet member; and



means for individually detachably connecting each of said plurality of individual ribs to said U-shaped profile member.

4,142,754

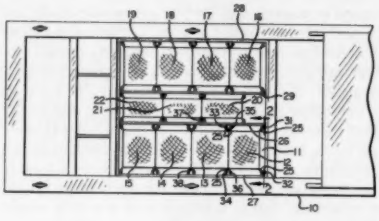
FISH BRAILER

James W. Colvin, 1477 4th St., Astoria, Oreg. 97103

Filed Jun. 10, 1977, Ser. No. 805,536

Int. Cl.[2] B66C *1/12*; A01K *73/06*

U.S. Cl. 294—77 **8 Claims**



1. A fish brailer for a ship or barge comprising a plurality of bag-shaped nets having closed bottom ends and open top ends, four suspension loops on the top end of each net, a pair of spaced apart parallel crib planks in a fish locker in said ship, said planks extending in a horizontal direction and disposed in vertical planes, and pairs of net hanger hooks mounted at intervals along confronting faces of said crib planks, said suspension loops of adjacent nets overlaping each other and hung on said hooks so as to hold said open top ends of the nets in rectangular configurations with adjacent sides of the nets abuting each other and leaving no open spaces between the nets whereby said open tops of the nets span substantially the entire area of said locker to receive all the fish deposited in the locker.

4,142,755

VEHICLE DRAG REDUCER

Edgar L. Keedy, P.O. Box 83, Liberty Center, Ohio 43532

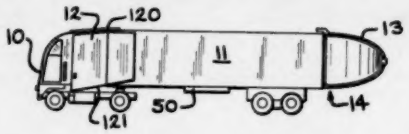
Filed Aug. 12, 1977, Ser. No. 824,083

Int. Cl.[2] B62D *35/00*

U.S. Cl. 296—1 S **5 Claims**

1. A low drag truck tractor and trailer combination comprising a truck tractor having a cab, a trailer, an air deflector assembly comprising air deflector shields attached to said cab of said truck tractor and extending to and overlapping the sides and top of the front end of said trailer and means for uging said

shields into contact with said trailer, said air deflector assembly reducing air drag in the region between said truck tractor and said trailer, and a drag reducer shield attached to enclose the rear end of said trailer defining an inner chamber and having a generally streamlined outer surface, and front and rear ends, said outer surface at said front end of said drag reducer shield being substantially coextensive with the perimeter of the rear end of said trailer, said outer surface converging generally convexly to an apex at said rear end of said drag reducer shield,



and means for removing said shield from enclosing the rear end of said trailer, and wherein said air deflector assembly includes three air deflector shields, means attaching one of said deflector shields to the top and near the rear of said truck tractor cab and extending to and overlapping the top of the front end of said trailer, means attaching the other two of said air deflector shields to the opposite sides near the rear of said cab and extending to and overlapping the respective sides of the front end of said trailer.

4,142,756

ARRANGEMENT FOR CLOSING THE INLET PIPE OF A CONTAINER

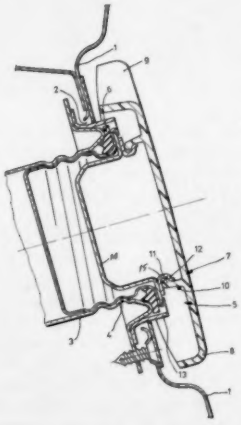
Bodo Henning, Braunschweig; Heinz Otto, and Helmut Kruger, both of Wolfsburg, all of Fed. Rep. of Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Filed Oct. 25, 1977, Ser. No. 845,285

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1976, 2657747

Int. Cl.[2] B65D *41/04*

U.S. Cl. 296—1 C **9 Claims**



1. In a motor vehicle comprising a vehicle body having a body opening and a fuel inlet pipe having an end thereof extending through said body opening for supplying fuel to a fuel tank arranged within said body; the improvement comprising a cap for closing said end of said fuel inlet pipe, said cap including:

(a) handle means constituting a first portion of said cap and having external dimensions which are wider than said body opening;

(b) fastening and sealing means constituting a second portion of said cap and having no external dimensions which are wider than said body opening;

(c) releasable means, for connecting said first portion of said second portion of the cap in a manner permitting transmission of rotational forces and causing disengagement of said first portion from said second portion upon application to said first portion by said vehicle body of lateral forces, and forces directed outwardly away from said fuel inlet pipe, as are capable of damaging said second portion or said inlet pipe, resulting in leakage from the fuel tank.

4,142,757

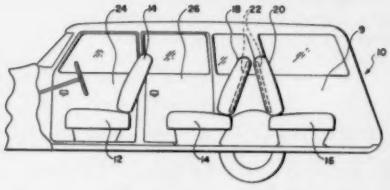
FOLD DOWN MULTI-PURPOSE VEHICLE SEAT BACK CORE OR THE LIKE AUTOMOTIVE STRUCTURAL MEMBER

Alva E. Fogle, Jr., Buffalo Grove, Ill.; William E. Brennan, Troy, and Jacque Passino, Orchard Lake, both of Mich., assignors to K & M Plastics, Inc., Elk Grove Village, Ill.

Filed Oct. 27, 1977, Ser. No. 845,845

Int. Cl.[2] A47C *7/00*

U.S. Cl. 296—63 **19 Claims**



1. A load floor for the core of a fold down vehicle seat or the like automotive structural member comprising

A. a hollow blow-molded member of synthetic resin whose overall thickness is substantially less than its size,

B. including a pair of generally parallel walls extending over substantially all of said member having a peripheral connecting wall joining them around the member,

C. a plurality of tying links extending between the parallel walls on the interior of the member and comprising

i. each such link being integral with a first parallel wall and comprising an indented formation having a bottom which is generally parallel with said first parallel wall from which the indented formation extends,

ii. the depth of the indented formation being such as to carry the said bottom into engagement with the interior surface of a portion of the second and opposite parallel wall and forming a web therewith which is approximately twice the thickness of either of the parallel walls,

iii. the indented formation being produced during the blow-molding operation whereby the said bottom and the said portion of the respective parallel walls are permanently welded together,

D. said tying links being distributed generally throughout the enter area of said member whereby to rigidify and strengthen said member throughout its area to serve as weight support and

E. said member having means to accommodate if not enable securement of automotive hardware.

4,142,758

SAFETY AND AIR DEFLECTOR

Richard H. Scaife, R.D. Box 302C, Philipsburg, Pa. 16693

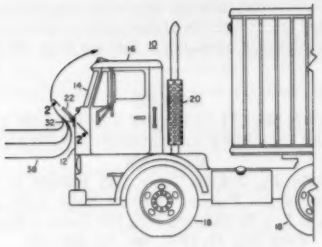
Filed Nov. 14, 1977, Ser. No. 851,459

Int. Cl.[2] B60J *1/60*

U.S. Cl. 296—91 **6 Claims**

1. A windshield deflector mountable upon a substantially vertical forward portion of a vehicle, comprising in combination:

a transparent shield;
a mounting bracket integrally attached to said transparent shield by attachment means;
attachment means comprising in combination:
a reinforcing strip adjacent to said mounting bracket and adjacent to said transparent shield;



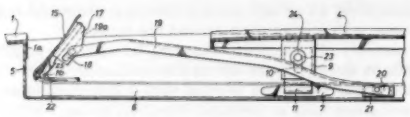
cu · ·oning tape adjacent to said transparent shield;
a washer adjacent to said cushioning tape;
a rivet extending through said mounting bracket, reinforcing strip, cushioning tape and washer;
means for attaching said adjustable mounting bracket to the forward portion of said vehicle.

4,142,759

WIND DEFLECTOR FOR THE SLIDING TOP OF A MOTOR VEHICLE

Horst Bienert, Gauting, Fed. Rep. of Germany, assignor to Webasto-Werk W. Baier KG, Fed. Rep. of Germany

Filed Aug. 30, 1976, Ser. No. 718,818
Claims priority, application Fed. Rep. of Germany, Sep. 9, 1975, 7528385[U]
Int. Cl.² B60J 7/22
U.S. Cl. 296—137 J **3 Claims**



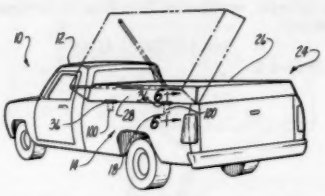
1. In a cover assembly for the opening in the top of a motor vehicle, an open frame shaped to fit said top opening, adapted for securement in fixed relation with the top, and having a central longitudinal fore-and-aft first axis, a cover shaped to conform to and fit said frame, guide means fixed with said frame in parallel relation with said first axis, bracket means fixed with said cover and including a slide engaging and positively guided by said guide means, to guide said cover for movement from a first position obturating the opening in said frame, to a second position clearing said opening, a deflector plate, first means mounting said plate to said frame within the opening therein, for pivoting about a second axis normal to said first axis, from a first position collapsed within said frame, to a second position erected with respect to said frame, second means responsive to movement of said cover along said first axis, between its said first and second positions and effecting pivoting of said plate between its said first and second positions, respectively, and in timed relation with movement of said cover, said bracket means comprising two elements adjustable with respect to each other for variable length, with one element connected to said cover and the other element connected to said slide, said second means comprising an actuating member connected to said other element, and spring means engaging said plate and urging the same in pivotal movement about said second axis, from its said first to its said second position, said second means further comprising an elongated lever disposed generally parallel with said first axis and pivoted at its rearward end to said frame, said plate including a slotted ear depending therefrom, a stud fixed with the forward end of said lever and slidably and pivotally engaging the slot in said ear, and roller means journaled to said bracket means and rollable along said lever in controlling contact therewith as said cover moves between its said first and second positions, and each said element of the bracket means including a vertically-disposed arm, said arms overlapping, there being an essentially vertical slot in the arm of said first element, and a bore in the arm of said second element, a screw passing through said slot and bore, a nut on said screw operable to releasably secure said arms together fixedly and in a selected one of a plurality of adjusted relations parallel with the slot in said first element, and a journal bearing for said roller means integral with said screw and extending axially thereof.

4,142,760

VEHICLE COVER WITH HOLD DOWN MEANS

Denzel J. Dockery; Devan T. Dockery, both of P.O. Box 7048, Flint, Mich. 48507, and Rex G. Carlson, Rte. 2, Box 882, Mio, Mich. 48647

Filed Sep. 26, 1977, Ser. No. 836,532
Int. Cl.² B60J 7/10
U.S. Cl. 296—137 B **10 Claims**



1. For use with a vehicle having an open bed, two sidewalls, a frontwall and a backwall, at least one sidewall having an interior surface and exterior surface and a stake hole formed through the sidewall, a device comprising
a substantially rigid cover, said cover being dimensioned to substantially enclose said open bed of said vehicle,
hinge means secured to said cover, and
hold down means for securing said hinge means to one of said bed sidewalls whereby said hinge means permit said cover to pivot upwardly from the other bed sidewall about an axis substantially parallel to the longitudinal axis of the vehicle to provide access to the interior of said bed,
wherein said hold down means further comprises a tubular housing insertable into the stake hold having at least one side opening and inclined deflection means secured along the upper edge of the opening, a clamping means comprising a member having a free end in registration with said housing opening and means accessible exteriorly of the housing for selectively moving said clamping means between a first position in which the free end of said member is substantially contained within the interior of the housing, and a second position in which the free end of the member abuts against the inclined deflection means to extend outwardly through the housing opening and abut against the interior of the truck bed sidewall.

4,142,761
VEHICLE ROOFS

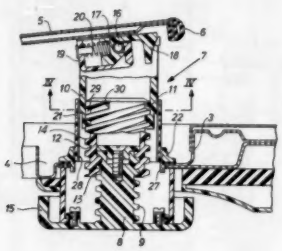
Alfons Lutz, Emmering; Hans Jardin, Inning; Horst Bienert, Gauting, and Georg Kohlpaintner, Munich, all of Fed. Rep. of Germany, assignors to Webasto Werk W. Baier GmbH & Co., Fed. Rep. of Germany

Filed Nov. 8, 1977, Ser. No. 849,647

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1977, 2710193

Int. Cl.² B60J 7/00

U.S. Cl. 296—137 B **13 Claims**



1. Vehicle body apparatus comprising a vehicle body opening, a cover for closing said opening, a frame surrounding the opening, and a telescopic jack for raising and lowering one end of said cover; said telescopic jack including:

a first threaded portion arranged on the frame,

a second threaded portion detachably connected to the cover,

at least one third threaded portion threadably engaging with the first and second threaded portions,

and connecting means operatively interconnecting said second threaded member and said frame for securing said second threaded portion against rotational movement with respect to said frame while permitting axial movement of said second threaded portion with respect to said frame.

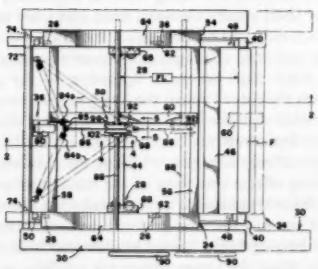
4,142,762
ROCKABLE AGAINST-THE-WALL TYPE RECLINING CHAIR

W. Dale Jones, 7020 Aztec Dr. NE., Albuquerque, N. Mex. 87110

Continuation-in-part of Ser. No. 840,677 and Ser. No. 840,668, both Oct. 11, 1977, which both is a Continuation-in-part of Ser. No. 720,244, Sep. 3, 1976, Pat. No. 4,057,289. This application Nov. 11, 1977, Ser. No. 850,477

Int. Cl.² A47C 1/02

U.S. Cl. 297—84 **9 Claims**



1. In an against-the-wall type reclining chair having a carriage mounted upon a base for movement relative to the base between a rearward against-the-wall position and a forward away-from-the-wall position, chair seat, back and footrest elements, reclining linkage means supporting said elements upon said carriage for movement between respective normal and reclined positions, an actuating member on said carriage movable back and forth between a first and second position for moving at least one of said seat, back and footrest elements between its normal and reclined positions, respectively, and return spring means biasing said carriage to its rearward position, said carriage being gravitationally maintained at said forward position against the action of said return spring means when said chair is occupied and said return spring means being operable to return said carriage to said rearward position when said chair is unoccupied; the improvement wherein said return spring means comprises tension spring means coupled at one end to said base, coupling means mounted on said member coupling the other end of said tension spring to said carriage via said member, one way releasable drive means in said coupling means operable when engaged to cause movement of said member from said second position to said first position to extend said spring means by a fixed amount to thereby increase the spring bias applied to said carriage, and drive release means operable when said carriage is at said rearward position to disengage said drive means to permit said tension spring means to contract by said fixed amount.

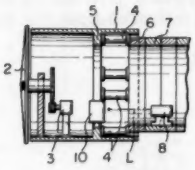
4,142,763
ATTITUDE CONTROL MEANS OF TUNNEL BORING MACHINE SHIELD

Yoshihiro Kumaki, Urawa; Junpei Kawade, Ichikawa; Toshiaki Takano, Tokyo, and Mitsuo Inoue, Chiba, all of Japan, assignors to Tekken Construction Co. Ltd., Tokyo, Japan

Filed Jul. 22, 1977, Ser. No. 818,334

Int. Cl.² E21D 9/08, 9/10

U.S. Cl. 299—1 **3 Claims**



1. An attitude controlling system for shield type tunnel boring machine having tunnel boring means at the forward end and a plurality of selectively drivable jacks disposed at the rearward end for propelling the machine toward the forward end, the system comprising in combination

means installed in the bored tunnel behind and remote from the machine for transmitting a laser beam toward the machine parallel to a predetermined tunneling direction,

a first deviation detecting means installed in the machine for receiving said laser beam and detecting any axial deviation of the machine with respect to the axis of the beam, said first detecting means comprising an X-Y scanning type beam receiving and detecting device having a central aperture and a plurality of photoelectric elements arranged crosswise along horizontal and vertical axes passing through said aperture, said X-Y scanning device being supported for movement along the horizontal X axis and vertical Y axis defining an expanded area for scanning the beam, moving means for moving the device along said X and Y axes until the beam is incident on said photoelectric elements adjacent the central aperture to detect any deviation of the machine along the X and Y axes, and means generating axial deviation signals corresponding to a detected deviation of the machine,

a second detecting means carried behind the first detecting means with respect to said laser beam transmitting means for detecting any angular deviation of the machine with

respect to the beam axis, said second detecting means comprising a lens converging said laser beam passed through said central aperture of the X-Y scanning device, a gyroscopic detector mounted for rotation relative to said first detecting means about vertical and horizontal axes and having a plurality of photoelectric elements on which said converged laser beam through said lens is focused and generating a deviation signal when the laser beam focused by the lens is out of the center of said photoelectric elements, and means for rotating said gyroscopic detector selectively about its vertical and horizontal axes of rotation relative to said first detecting means in response to said last-named deviation signal until said focused laser beam is incident on the center of the photoelectric elements of said gyroscopic detector, and means for generating angular deviation signals corresponding to rotations of the gyroscopic detector about its vertical and horizontal axes,

a third deviation detecting means installed in the machine for detecting any rolling deviation of the machine about its longitudinal axis and generating rolling deviation signals detected, and

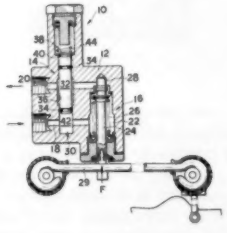
means responsive to said axial, angular and rolling deviation signals for selectively driving said jacks to correct any of the deviations of the machine.

4,142,764

HYDRAULIC PRESSURE CONTROL VALVE FOR USE IN A HYDRAULIC BRAKE SYSTEM

Hiroshi Kawaguchi, Mishima, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan

Filed Feb. 6, 1978, Ser. No. 875,158
Claims priority, application Japan, Feb. 14, 1977, 52-15683[U]
Int. Cl.[2] B60T *8/18*
U.S. Cl. 303—6 R **7 Claims**



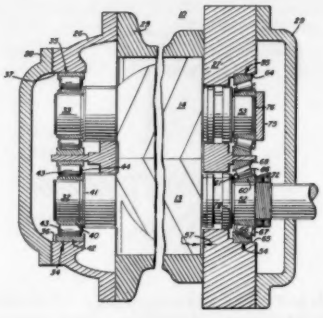
1. In a hydraulic pressure control valve for use in a hydraulic brake system having a casing in which there are provided an inlet port operatively connected to a master cylinder, an outlet port operatively connected to a plurality of wheel brake cylinders and a hydraulic pressure relieving mechanism adapted to relieve a hydraulic pressure from said master cylinder at a predetermined rate, the improvement wherein said control valve is provided with a bypass mechanism which comprises a cylinder defined in said casing and operatively communicating with said hydraulic pressure relieving mechanism and said inlet and outlet ports, a piston slidably fitted in said cylinder, said piston having one end subject to atmospheric pressure and an opposite end subject to hydraulic pressure from said inlet port, and biasing means adapted to urge said piston toward the inlet port side, and which are adapted to communicate said inlet and outlet ports upon the shifting motion of said piston toward the outlet port side due to a hydraulic pressure rise on said inlet port side which is sufficient to overcome the biasing force of the biasing means.

4,142,765

ROTOR BEARING ASSEMBLY FOR ROTARY GAS MACHINE

Oleif Olsaker, Michigan City, Ind., assignor to Sullair Corporation, Michigan City, Ind.

Filed Feb. 10, 1977, Ser. No. 767,381
Int. Cl.[2] F16C *35/06*; F04B *23/14*
U.S. Cl. 308—207 R **4 Claims**



1. In a rotary screw gas machine having a housing with a low pressure port at one end and a high pressure port at the other end, main and gate rotors having shafts on which the rotors are mounted for rotation in the housing, the rotors meshing to move gas between the ports, the rotors being subject to a low radial load at the low pressure end, to a high radial load at the high pressure end and to an axial load urging the rotors toward the low pressure end when the rotary screw gas machine is operating, a mounting assembly for each rotor shaft comprising:

an axially-floating bearing with radial load capability between the rotor shaft and the housing at the low pressure end of the rotor shaft permitting the rotor shaft to move axially relative to the housing, said axially-floating bearing accommodating said axial movement of the rotor;

a single bearing with axial and radial load capability between the rotor shaft and the housing at the high pressure end of the rotor shaft including a cup race carried by the housing fixed against movement axially inward toward the low pressure end, a cone race movably carried by the rotor shaft axially outward from said cup race, and tapered rollers between said races; and

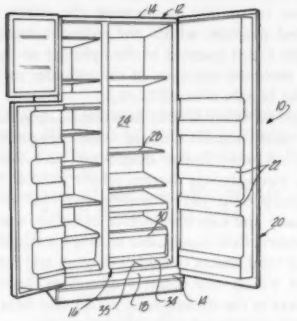
means for axially positioning said cone race on the rotor shaft including a locking member adjustably fixed to the rotor shaft axially outward from said cone race having a surface engaged by the outward end of said cone race to hold said cone race against movement axially outward on the rotor shaft whereby operation of the gas machine moves the rotor toward the low pressure end of the housing with said locking member moving said cone race toward said cup race until the axial and radial load bearing is operatively engaged, whereby the axial and radial load bearing effects centering of the rotor shaft radially when the rotor is subjected to said axial load moving the rotor shaft toward the low pressure end, the axial and radial load bearing being loaded by the axial load placed on the rotor when the rotary screw gas machine is operated the rotor and rotor shaft being moved toward the high pressure end of the machine by a radial and axial load generated by the weight of the rotors when the rotary screw gas machine ceases operating, so as to unload the tapered roller bearings.

4,142,766

IMPACT REINFORCEMENT AND REPAIR METHOD FOR REFRIGERATOR CABINET LINERS

Leo Swerbinsky, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Jan. 5, 1978, Ser. No. 867,080
Int. Cl.[2] F25D *11/00*; B32B *3/00*
U.S. Cl. 312—214 10 Claims



1. In combination with a refrigerator having a refrigerator cabinet and door, said cabinet including:

a steel outer case;

a refrigerator liner of a plastic material directly joined to said steel outer case;

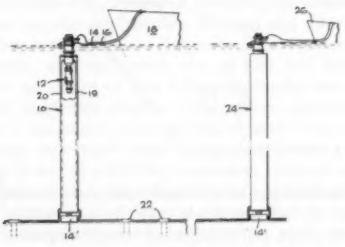
a liner impact reinforcement comprising a reinforcing strip secured to said refrigerator liner extending across the bottom front surface thereof exposed upon opening movement of said refrigerator door.

4,142,767

SWIVEL ASSEMBLY

Robert D. Karl, Pacific Palisades; Ian B. Engh, Northridge, and Harry Bennison, Los Angeles, all of Calif., assignors to Amtel, Inc., Providence, R.I.

Filed Nov. 17, 1977, Ser. No. 852,295
Int. Cl.[2] H01R *39/00*
U.S. Cl. 339—1 R 6 Claims



1. A swivel assembly for lying in a body of water to transfer oil, natural gas, or other cargo to or from a ship or other floating structure comprising:

a non-rotatable unit;

an upper unit surrounding the upper portion of said non-rotatable unit;

a center unit having a portion lying within said non-rotatable unit;

said upper unit having a top plate lying over said center unit, and said center unit having a top plate normally lying immediately under said upper unit top plate, said top plates having aligned holes;

a plurality of bolts extending through holes of said upper unit top plate and threadably engaged with holes of said center unit top plate; and

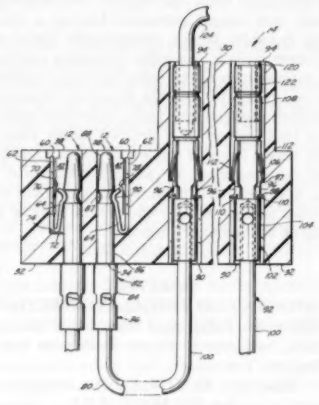
said non-rotatable unit having walls defining a shoulder for supporting said center unit against falling when disconnected from said upper unit, whereby unscrewing said bolts can gently lower the center unit onto the shoulder, while screwing in the bolts can raise the center unit off the shoulder.

4,142,768

CONNECTOR BLOCK

Robert B. Pittman, River Edge, N.J., and Michael Offerman, Merrick, N.Y., assignors to Industrial Electronic Hardware, New York, N.Y.

Filed Oct. 21, 1977, Ser. No. 844,445
Int. Cl.[2] H01R *9/16, 31/08*
U.S. Cl. 339—19 5 Claims



1. A connector block having at least one internally bussed section comprising:

(A) an electrically insulating housing comprising top and bottom faces, said housing having exposed on one face a plurality of apertures adapted to receive leads and having exposed on an opposite face a plurality of first openings in line with and communicating with said apertures respectively and a second opening bridging sides of and communicating with said plurality of first openings; said housing having intermediate said faces a first ledge facing said one face and a second ledge facing said opposite face, said first ledge being disposed in said second opening intermediate an adjacent pair of said first openings; and

(B) an electrically conductive buss contact disposed in said second opening and being insertable thereinto through said opposite face, said buss contact comprising a body portion disposed in said second openings, a plurality of contact portions resiliently extending from said body portion and into associated first openings respectively for contact with leads inserted through said associated apertures and into said associated first openings, a first stop portion on said buss contact being engageable with said second ledge to limit movement of said buss contact in the direction of said one face, and a second stop portion extending from said buss contact and being engageable with said first ledge to limit movement of said buss contact in the direction of said opposite face.

4,142,769
ELECTRICAL CONNECTOR

Theodore H. Wood, Brewster, Mass., assignor to Alden Research Foundation, Westboro, Mass.

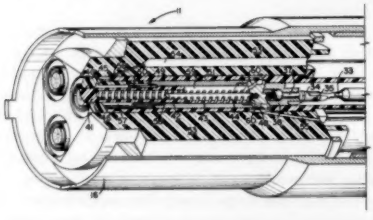
Filed Dec. 9, 1977, Ser. No. 859,252
Int. Cl.[2] H01R 7/32, 13/54
U.S. Cl. 339—88 R 11 Claims

1. An electrical connector comprising:
a first and a second tubular member of yieldable material, telescoping on a common axis;
interengaging connector means associated with each of the respective tubular members;
a lateral extension from one member overlapping the other member, said lateral extension having a recess with a radially inwardly facing, substantially linear surface and an adjacent radially inwardly extending sidewall;
a radial extension from the other member rotatively engaging in said recess to hold the members telescoped and the conductors engaged; the radial extension having an edge with a lead corner of a greater radius than the linear surface which engages the linear recess to deform at least one of said members as the radial extension enters the recess, said members regaining their original shape as the lead edge is rotated into the recess with a snap-action locking of the members together.

4,142,770
SUBSEA ELECTRICAL CONNECTOR

Alfred Y. Butler, Jr., Bellair, and Harold W. Clemons, Houston, both of Tex., assignors to Exxon Production Research Company, Houston, Tex.

Filed Dec. 27, 1977, Ser. No. 864,295
Int. Cl.[2] H01R 13/52
U.S. Cl. 339—94 M 11 Claims

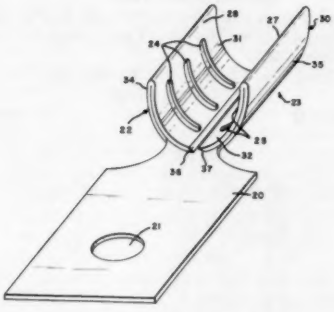


1. A subsea wet electrical connector comprising:
(a) a male plug having at least one male pin extending therefrom;
(b) a male contact mounted on the male pin;
(c) male conductor means for providing an electrical conducting path from an electrical cable entering the male plug to the male contact;
(d) a dielectric block within said male plug for insulating said male pin and male conductor;
(d) a female receptacle having therein at least one conductive cylinder means, each of said cylinder means corresponding to and adapted to receive each of said male pins;
(f) a female contact mounted within said conductive cylinder means which mates with the male contact when the male pin is inserted in the cylinder means and which provides an electrical conducting path from the male pin to the cylinder means;
(g) female conductor means for providing an electrical current path from an electrical cable entering the female receptacle to the cylinder means;
(h) nonconductive piston means mounted within the conductive cylinder means, said piston means being rearwardly displaced within the cylinder means when the male pin is inserted therein;
(i) resilient means for maintaining the piston means in an extended position within the cylinder means when the male pin is not inserted in the cylinder so that the piston means seals the entrance of the cylinder means and protects the female contact;
(j) a dielectric block within said female receptacle for insulating said female contact, said conductive cylinder means, and said female conductor, said dielectric block having passageways therein which provide a continuous circulatory flow path between the rear of said female receptacle and said conductive cylinder; and
(k) a dielectric fluid immiscible with sea water which fills the internal void spaces of said male plug and female receptacle and which convectively circulates through said passageways in the dielectric block so that heat is dissipated from the vicinity of said cylinder means.

4,142,771
CRIMP-TYPE TERMINAL

Ronald B. Barnes, Camp Hill; Stanley B. Brinser, Harrisburg, and Robert C. Swengel, Jr., York, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 515,119, Oct. 16, 1974, abandoned.
This application Mar. 29, 1976, Ser. No. 671,215
Int. Cl.[2] H01R 11/08
U.S. Cl. 339—95 R 59 Claims



1. The combination of a single cable and a terminating means crimped around said single cable for terminating said single cable, in which said terminating means comprises:
a barrel-shaped outer wall having a convex inner surface and an open seam extending axially along the length thereof; and
an inner wall adjacent to said outer wall and having a concave inner surface;
said inner wall comprising first and second sections each having inner surfaces and each having first and second oppositely positioned edges and each integrally connected at said first edge to said outer wall along one side of said open seam and folded from said open seam towards each other upon said inner surface of said outer wall;
said single cable having a perimeter with first and second portions;
said outer and inner walls crimped around first and second

portions of the perimeter, respectively, of said single cable;

the inner surfaces of said first and second sections of said inner wall physically engaging said first and second portions of said single cable and pressing said first and second portions of said single cable therewithin and against each other.

4,142,772

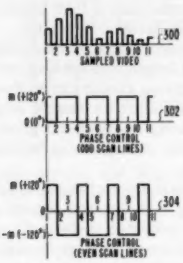
REDUNDANT HOLOGRAM RECORDING METHOD EMPLOYING TEMPORAL INFORMATION SIGNAL

Michael J. Lurie, East Brunswick, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 12, 1977, Ser. No. 796,416

Int. Cl.² G03H *1/08, 1/16*

U.S. Cl. 350—3.66 **1 Claim**



1. In a method for optically recording a surface hologram on a given area of a recording medium that is simultaneously illuminated by angularly-displaced information and reference beams of mutually coherent wave energy, wherein said information beam is intensity-modulated successively by each of a series of samples of a video signal of a scene that has been raster-scanned by a plurality of relatively fast substantially linear scans parallel to a first direction and at least one relatively slow substantially linear scan in a second direction substantially perpendicular to said first direction, and wherein the value of the angular displacement between said information and reference beams is varied for each successive sample in correpondence with said raster scan so that said hologram reconstructs an image of said scene; the improvement for reducing the resolvable coherent noise patterns present in the reconstructed image due to optical defects in the recording of said hologram, said improvement comprising the steps of:

during each line of a first set, comprising alternate ones of said linear scans in said first direction, providing a first given relative phase difference between said information and reference beam for the first sample of each of successive groups of three consecutive samples during that line of said first set, and providing a second given relative phase difference 120° displaced from said first given relative phase difference for the second and third sample of each of said successive groups of three consecutive samples during that line of said first set, and

during each line of a second set, comprising the remaining ones of said linear scans in said first direction, providing said second given relative phase difference for only those samples of that line of said first set having said first given relative phase difference, and providing a third given relative phase difference 120° displaced from both said first and second given relative phase difference for the remaining samples of each line of said second set.

4,142,773

METHOD FOR TRANSMITTING TWO-DIMENSIONAL INFORMATION AND SYSTEM FOR EFFECTING SAME

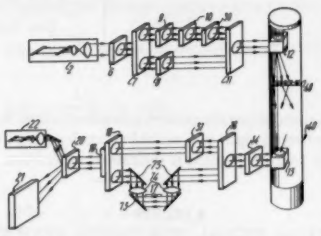
Rimily F. Avramenko, Baltiiskaya ulitsa, 4, kv. 46; Valentina I. Nikolaeva, Leningradsky prospekt, 48, kv. 94, and Leonid A. Orlov, ulitsa Dimitrova, 22/2, kv. 33, all of Moscow, U.S.S.R.

Continuation of Ser. No. 658,618, Feb. 17, abandoned, which is a continuation of Ser. No. 537,769, Dec. 31, 1974, abandoned. This application Jul. 7, 1977, Ser. No. 813,690

Claims priority, application U.S.S.R., Jun. 21, 1974, 2032052

Int. Cl.² G02B *27/00;* H04B *9/00*

U.S. Cl. 350—3.78 **18 Claims**



1. A method for transmitting two-dimensional information about an object comprising the steps of:

forming a two-dimensional useful signal by means of two-dimensional spatial modulation of a coherent light flux;

forming a two-dimensional reference signal;

transmitting said useful signal and said reference signal through a communication line;

said reference signal being displaced with respect to said two-dimensional useful signal by a time interval not in excess of the time instability interval of said communication line through which said signals are successively transmitted;

carrying out combined processing of the received two-dimensional reference signal and the received two-dimensional useful signal at the receiving end of said communication line so as to ensure compensation of identical distortions introduced by said communication line into said two-dimensional reference signal and said two-dimensional useful signal, wherein said combined processing of said two-dimensional reference signal and said two-dimensional useful signal is carried out by matching in time and space the received two-dimensional reference signal and the received two-dimensional useful signal and recording a hologram of the received two-dimensional useful signal in relation to the received two-dimensional reference signal, which hologram, when restored, makes it possible to obtain the undistorted two-dimensional information that has been transmitted, wherein said two-dimensional reference signal and said two-dimensional useful signal are periodically subjected to spatial randomization in said communication line.

4,142,774

FLEXIBLE OPTICAL TRANSDUCER

Stephen Wright, London, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Jun. 10, 1977, Ser. No. 805,270

Claims priority, application United Kingdom, Jun. 15, 1976, 24685/76

Int. Cl.² G02B *5/14;* G02F *1/29*

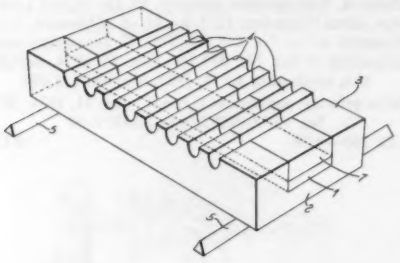
U.S. Cl. 350—96.12 **9 Claims**

1. A flexible transducer comprising:

a flexible substrate having a major surface, said substrate of transparent material having a first index of refraction;

an optical waveguide of flexible material extending through said substrate, said waveguide having a higher index of refraction than said first index of refraction; and

a set of grooves in said major surface, said grooves overlying and transverse to said waveguide, said grooves having a selected pitch such that flexure of said transducer pro-



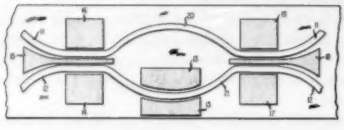
duces a periodic strain pattern extending across said waveguide whereby light of a suitable wavelength propagating through said waveguide is diffracted therefrom.

4,142,775

OPTICAL SIGNAL PROCESSING DEVICES

Vellayan Ramaswamy, Lincroft, and Robert D. Standley, Shrewsbury, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 27, 1976, Ser. No. 727,047
Int. Cl.[2] G02B 5/14
U.S. Cl. 350—96.14 **9 Claims**



1. An optical signal processing system including an interconnected array of optical signal processing devices including at least a first optical signal processing device and a second optical signal processing device, which devices each comprise a first directional coupler and a second directional coupler, but not more than two directional couplers; input means for introducing light into the first directional coupler, introduction of said light resulting in coupled light; processing means for performing signal processing operations on the coupled light, which said processing means includes a first optically conductive path and a second optically conductive path linking the first directional coupler with the second directional coupler, the processing of said coupled light resulting in processed light; and output means for utilizing the processed light: which said first directional couplers and said second directional couplers each consists essentially of

(1) a first optical strip guide and a second optical strip guide, formed in a body of electrooptic material so as to be synchronously coupled over a coupled length sufficient to provide more than half power coupling but less than full power coupling from one guide to the other,

(2) a set of electrodes on the body, for producing an electric field at the strip guides over at least a portion of the coupled length, the set of electrodes consisting of a central electrode, situated between the strip guides and at least one outer electrode, and

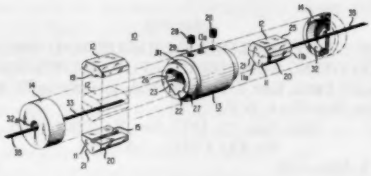
(3) means for impressing a control voltage on the electrodes of magnitude to produce sufficient asynchronism between the guides to reduce the coupling to half power whereby the directional coupler is caused to become a 3 dB coupler; in which said signal processing system the optical signal processing devices are interconnected such that the output means of the first optical signal processing device includes at least a portion of the input means of the second optical signal processing device.

4,142,776

OPTICAL FIBER RIBBON CARTRIDGE CONNECTOR

Allen H. Cherin, Doraville, and Anthony Osborne, Duluth, both of Ga., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 20, 1976, Ser. No. 724,653
Int. Cl.[2] G02B 5/14
U.S. Cl. 350—96.21 **7 Claims**



1. Apparatus for connecting a first linear array of optical fibers to a second linear array, comprising:

first and second connectors each comprising:

a substrate having a lengthwise-running cavity with spaced, parallel fiber-receiving grooves in its floor;

a cover including an insert for mating engagement in said cavity, for containing fibers in said grooves;

means for consistently distinguishing between the two ends of each substrate;

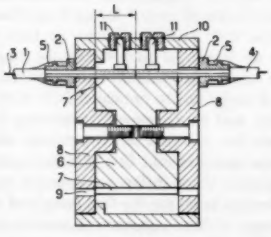
a cartridge having an interior chamber of uniform cross-section for receiving said first and second connectors, said cartridge having reference surfaces for registration with corresponding reference surfaces on said substrate.

4,142,777

DEVICE FOR CONNECTING OPTICAL FIBRES TOGETHER

Francis Gauthier, Oullins, and Georges Mignien, Meyzieu, both of France, assignors to Societe Anonyme Dite: Les Cables de Lyon, Lyons, France

Filed May 18, 1977, Ser. No. 798,190
Claims priority, application France, May 26, 1976, 76 15945
Int. Cl.[2] G02B 5/14
U.S. Cl. 350—96.21 **14 Claims**



1. A device for connectng optical fibres together, the device comprising a plurality of pairs of fibre end pieces each terminating one of the fibres to be connected and a connection block for holding the end pieces end to end with their optical fibres aligned, wherein each fibre end piece includes three cylindrical rods which lie tangentially to each other in pairs and which encompass the end of one of the fibres to be connected, and wherein the connecting block includes a cylindrical core having an axis of symmetry which extends parallel to the fibres to be joined and which includes a V-shaped groove formed in its outer periphery for each pair of fibres to be connected, the connecting block further including a pair of plates arranged on

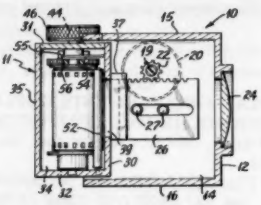
either side of the core, each plate receiving one fibre end piece of each pair of fibres to be connected, the end pieces projecting through their respective plates and lying in respective grooves of the core end to end with their corresponding end pieces for interconnection of their fibres; the connecting block further including means for applying transverse pressure on the three rods of each end piece to ensure proper alignment of each fibre in its V-shaped groove.

4,142,778

STEREOSCOPIC VIEWER AND REPLACEABLE CARTRIDGE THEREFOR

Max Lasky, 3705 Lonsdale Ave., Cincinnati, Ohio 45227, and Fred Perlin, 767 Plaza Amigo, Palm Springs, Calif. 92262

Filed Feb. 28, 1977, Ser. No. 772,940
Int. Cl.[2] G02B *27/02*
U.S. Cl. 350—135 **6 Claims**



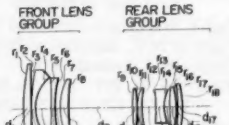
1. A stereoscopic viewer and film cartridge combination comprising a viewer body having opposite sides, a front provided with a pair of viewing lenses spaced eye distance apart, and an open rear, a cartridge for holding a film strip having stereoscopic pairs of pictures arranged along the length thereof, said cartridge being smaller than the open rear of said viewer so as to be receivable therein and withdrawable therefrom, said viewer having support means movable in the viewing direction and removably engageable with said cartridge whereby said cartridge can be supported by said support means and moved to bring the film strip contained within the same into the focal plane of said pair of lenses, said support means comprising a pinion shaft extending between the sides of said cartridge above the line of sight of said lenses, said pinion shaft engaging rack slides carried by the sides of said cartridge.

4,142,779

ZOOM LENS SYSTEM

Ryota Ogawa, Tsurugashima, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 6, 1977, Ser. No. 794,589
Claims priority, application Japan, May 10, 1976, 51-52938
Int. Cl.[2] G02B *15/14*
U.S. Cl. 350—184 **4 Claims**



1. A zoom lens system including a front lens group having a negative focal distance with respect to the object side and a rear lens group having a positive focal distance with respect thereto, said front and rear lens groups being relatively axially displaceable to maintain the image plane at a constant position, characterized by:

(a) the front lens group comprising, in order from the object side, a first positive lens, a second negative meniscus lens having a high negative power with respect to the image side, a third negative lens, and a fourth positive lens having a high positive power with respect to the object side,

(b) the first lens having a focal distance of $f_{1,2}$, the inverse refractive power of the image side of the second lens being f_4, and the focal distance between the image side of the third lens and the object side of the fourth lens being $f_{6,7}$,

(c) the rear lens group comprising a double concave lens, at least two lenses disposed in front of the double concave lens including a double convex lens on the object side of the rear lens group, and at least two convex lenses disposed behind the double concave lens on the image side thereof, and

(d) the lens system satisfying the following conditions:

$$(1)\quad 0.25 < \frac{\Delta f_B}{ls \cdot R} < 0.38\,,$$

$$(2)\quad 2.0 < \frac{f_{1,2}}{|Fa|} < 6.0\,,$$

$$(3)\quad 0.35 < \frac{f_4}{Fa} < 0.6\,,$$

$$(4)\quad 0.7 < \frac{f_{6,7}}{|Fa|} < 1.8\,,$$

$$(5)\quad 0.35 < \frac{b}{a} < 0.55\,,\text{ and}$$

$$(6)\quad 0.040 < \frac{\Sigma}{2w \cdot Fs} < 0.056$$

wherein:

Δf_B is the back-focus zoom variation,

ls is the air gap between the front and rear lens groups at the shortest focal distance,

R is the magnification variation ratio,

Fa is the focal distance of the front lens group,

b is the distance between the object side of the double concave lens and the object side of the double convex lens,

a is the total length of the rear lens group,

Σ is the overall length of the lens system, including the back-focus,

2w is the maximum angle of incidence, and

Fs is the shortest focal distance, and wherein the minimum value of the back-focus is greater than Fs, said lens system further defined by:

Angle of View 76° ~ 48°, Fa = −45.851

Front Lens Group				
r_1 =	93.224	d_1 = 3.5	n_1 = 1.58913	ν_1 = 61.1
r_2 =	−3721.425	d_2 = 0.1		
r_3 =	105.692	d_3 = 1.7	n_2 = 1.80610	ν_2 = 40.9
r_4 =	19.089	d_4 = 6.77		
r_5 =	−260.395	d_5 = 1.50	n_3 = 1.64000	ν_3 = 60.2
r_6 =	64.303	d_6 = 2.53		
r_7 =	32.315	d_7 = 3.18	n_4 = 1.80518	ν_4 = 25.4
r_8 =	85.920	d_8 = 27.6 ~ 11.9169 ~ 4.5074		
Rear Lens Group				
r_9 =	69.229	d_9 = 1.94	n_5 = 1.75500	ν_5 = 52.4
r_{10} =	−95.618	d_{10} = 0.10		
r_{11} =	20.592	d_{11} = 2.00	n_6 = 1.75500	ν_6 = 52.4
r_{12} =	44.108	d_{12} = 6.17		
r_{13} =	−67.806	d_{13} = 3.77	n_7 = 1.80518	ν_7 = 25.4
r_{14} =	22.366	d_{14} = 2.24		
r_{15} =	104.399	d_{15} = 3.00	n_8 = 1.56013	ν_8 = 47.0
r_{16} =	−27.764	d_{16} = 0.10		
r_{17} =	−482.240	d_{17} = 2.00	n_9 = 1.51633	ν_9 = 64.1

-continued

Angle of View 76° ~ 48°, Fa = −45.851

r_{18} = −50.921

F number	focal distance	back focus
1 : 3.5	28.803	41.217
1 : 4	40	49.812
1 : 4.5	49	56.720

$f_{1,2}$ = 154.425 Δf_B = 15.503
f_4 = −23.681 ls = 27.6
$f_{6,7}$ = 64.139 R = 1.701

where,

r_i is the radius of curvature of the i^{th} lens surface in order from the object side;

d_i is the distance between the i^{th} and $(i + 1)^{th}$ lens surface;

n_k is the refractive index of the k^{th} lens in order from the object, and

ν_k is the Abbe number of the k^{th} lens in order from the object.

4,142,780

EXCHANGEABLE LIQUID CRYSTAL PANEL

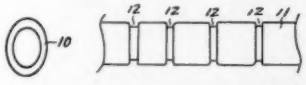
Takehiko Sasaki, Yomatokoriyama, and Tamotsu Koyama, Kashihara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 28, 1975, Ser. No. 562,982

Claims priority, application Japan, Mar. 29, 1974, 49-35853; Apr. 2, 1974, 49-37591

Int. Cl.[2] G02F *1/13*; H01R *11/02*

U.S. Cl. 350—334 **9 Claims**



1. In a combination comprising a liquid crystal cell having a multiplicity of contact areas and a circuit board having a multiplicity of contact areas, the improvement which comprises a compressible, resilient, connector means for connecting the contact areas of the liquid crystal cell with the contact areas of the circuit board, said connector means comprising a plurality of individual connectors made of a compressible, resilient, electroconductive material mounted on a retainer made of a compressible, resilient, electrically nonconductive material, the connectors being positioned in removable and electrical connecting relationship between opposed contact areas of the liquid crystal cell and the circuit board, the compressible and the resilient nature of the connectors and retainer functioning to distribute stress produced in the combination over both the connectors and the retainer, thereby substantially eliminating fatigue.

4,142,781

ELECTRO-OPTICAL DISPLAY DEVICE WITH ELECTRO-OPTICAL LIGHT VALVES

Guenter Baur, Freiburg, and Waldemar Greubel, Denzlingen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

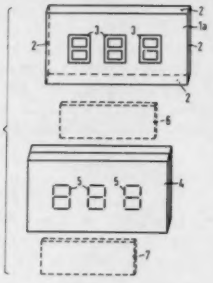
Filed Dec. 2, 1976, Ser. No. 747,035

Claims priority, application Fed. Rep. of Germany, Dec. 3, 1975, 2554226; Apr. 15, 1976, 2616669; Sep. 10, 1976, 2640909

Int. Cl.[2] G02F *1/13*

U.S. Cl. 350—345 **36 Claims**

1. In an optical display device having a display plate with at least one electro-optical light valve for controlling transmittance of light through the display plate, the improvement comprising means for collecting light and amplifying the brightness of the display device, said means including a flourescent plate having mirrored edge surfaces so that light is collected in the flourescent plate and directed onto each of the light valves.



4,142,782

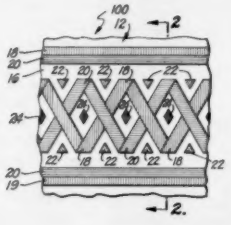
DISPLAY ARRANGEMENTS EMPLOYING THERMOCHROMIC COMPOSITIONS

Edward D. O'Brian, 1695 W. Crescent Ave., Ste. 564, Anaheim, Calif. 92801

Filed Apr. 3, 1975, Ser. No. 564,990

Int. Cl.[2] G02F *1/01*; G09F *13/00*

U.S. Cl. 350—354 **7 Claims**



1. A display arrangement including a support having a surface and visible areas of differently colored compositions located on said surface, in which the improvement comprises:

each of said compositions normally appearing as being of one color at one temperature and as being of another color at another different temperature, said compositions appearing as being differently colored at at least one temperature.

4,142,783

REVERSIBLE ELECTROCHROMIC DISPLAY DEVICE HAVING MEMORY

Edward M. Engler, Wappingers Falls, and Frank B. Kaufman, New York, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 31, 1977, Ser. No. 801,943

Int. Cl.[2] G02F *1/17, 1/23*

U.S. Cl. 350—357 **23 Claims**

1. A reversible electrochromic display device having memory comprising:

(a) a unit cell having a working electrode and a spaced apart counter electrode;

(b) means for applying an electric field across said electrodes in said unit cell and for reversing polarity;

(c) a layer of a porous copolymer resin coated on said working electrode, said resin having covalently bonded thereto electroactive molecules selected from the group consisting of pyrazoline derivatives, tetrathiafulvalene and its

derivatives, tetraselenafulvalene and its derivatives, p-tetracyanoquinodimethane, nickel bis(dithiolene) and p-benzoquinone, each of which molecules has a functional group which when reacted with said porous copolymer resin becomes covalently bonded thereto through said functional group and functional groups in said porous copolymer resin, said molecules being electrochromically active; and

(d) a solution of an electrolyte for the transport of electrons from said coated working electrode to said counter electrode.

4,142,784

PAD FOR SPECTACLE FRAMES

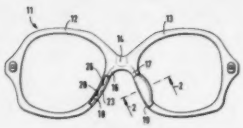
Walter H. Bononi, Zeppelinstrasse 9, 7012 Feilbach, Schmiden, Fed. Rep. of Germany

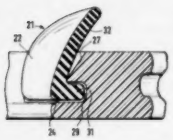
Filed Mar. 28, 1977, Ser. No. 781,791

Claims priority, application Fed. Rep. of Germany, Mar. 27, 1976, 2613151

Int. Cl.[2] G02C 5/12

U.S. Cl. 351—136 **1 Claim**





1. A pad and a spectacle frame for holding lenses said pad having a base area and comprising a homogeneous material which has a closed and substantially smooth surface, is resistant to aging and agreeable on the skin in view of its use with spectacles, is wear-resistant when spectacles are worn, is permanently connectable to the material used for said spectacle frame, made of translucent material, has a Shore D hardness of 10 to 30 in accordance with DIN 53 505 and is injection moldable,

said spectacle frame having spectacle rims made of plastic material having in the nose flank area and on each of the respective outer sides thereof a recess with an outer wall which is shaped to receive said base area of said pad when said spectacles are in use on the nose of a wearer and respective pockets which lie in approximately the same center plane as the spectacle frame in the area of the respective recess bottoms which pockets extend towards their respective grooves for holding respective lenses in the spectacle frame,

said base area of each of said pads comprising an outwardly directed rib which is bonded in said pocket,

said base area of each of said pads is in external contact with said respective outer walls of said recesses and the remaining part of said pads extend freely to the rear of said spectacle rim when not worn

the area between said pads and said outer walls of said respective recesses above said base area comprising an appreciable gap, said gap being free of bonding material.

4,142,785

EXPOSURE CONTROL CIRCUIT FOR CAMERA

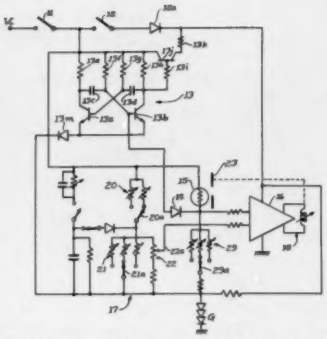
Seiichi Saito, Iruma, Japan, assignor to Nihon Beru-Haueru Kabushiki Kaisha (Bell & Howell Japan, Ltd.), Higashimurayama, Japan

Filed Dec. 13, 1977, Ser. No. 860,271

Claims priority, application Japan, Dec. 16, 1976, 51-167811[U]

Int. Cl.[2] G03B 7/08; H02J 1/00

U.S. Cl. 352—141 **8 Claims**



1. A camera lens for use with a camera adjustable for various film speeds and having an automatic exposure control system for intermittent use when the camera is not being operated to sense ambient conditions comprising:

an exposure control circuit having a photo responsive sensor for sensing ambient light conditions and transmitting a signal relative to the ambient conditions;

a control means associatively connected to said photo responsive sensor for adjusting the lens opening of the camera in accordance with said signal;

an intermittent switching means for periodically connecting and disconnecting said automatic exposure control circuit to a power supply at a predetermined frequency;

an automatic disconnecting means within said intermittent switching means for interrupting the connection to said power supply when the ambient light conditions are below the level necessary for film exposure.

4,142,786

LIQUID CRYSTAL DISPLAY DEVICE FOR A CAMERA

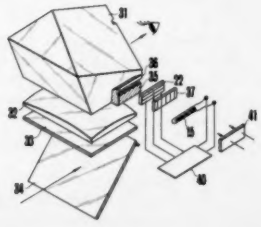
Ryoichi Suzuki, Kawasaki; Takashi Uchiyama; Seiichi Matsumoto, both of Yokohama; Takashi Amikura, Tokyo, and Tokuichi Tsunekawa, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 9, 1977, Ser. No. 832,009

Claims priority, application Japan, Sep. 9, 1976, 51-108297

Int. Cl.[2] G03B 15/05, 17/20

U.S. Cl. 354—32 **8 Claims**



1. A device for a camera comprising

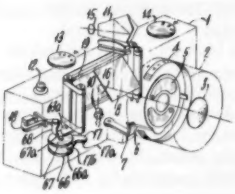
(a) a light measuring circuit for measuring the brightness of the object to be photographed,
(b) an information setting means for setting an exposure factor,
(c) a calculating circuit for calculating the output of the light measuring circuit and the exposure factor set by means of the information setting means so as to obtain the shutter time value corresponding to the brightness of the object to be photographed,
(d) a liquid crystal display means for displaying the shutter time value in accordance with the output of the calculating circuit,
(e) an optical system for illuminating the liquid crystal display means by ambient light and to direct the display value into the view finder,
(f) an artificial light source for illuminating the liquid crystal display means,
(g) a signal forming circuit for detecting the output of the calculating circuit and producing a signal for operating the artificial light source when the detected output corresponds to a time longer than the limit time for a hand held photograph,
(h) a driving means for operating the artificial light source in response to the signal from the signal forming circuit.

4,142,787

AUTOMATIC DIAPHRAGM CONTROL MECHANISM FOR A SINGLE LENS REFLEX CAMERA

Hiroshi Ueda, Nara, and Akira Yoshizaki, Osaka, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 559,868, Mar. 19, 1975, abandoned. This application Dec. 20, 1976, Ser. No. 752,234
Claims priority, application Japan, Mar. 29, 1974, 49-34744; Mar. 29, 1975, 50-34745
Int. Cl.[2] G03B *7/08, 19/12*
U.S. Cl. 354—38 **15 Claims**



1. In a single lens reflex camera provided with an objective lens having an adjustable diaphragm and a film disposed at the predetermined focal plane of said objective lens, which camera includes a mirror movable between a viewing position for directing light from a scene to be photographed to a view finder and a picture taking position for permitting said light traversing said objective lens and diaphragm to travel toward said focal plane, means for driving said mirror to the picture taking position from the viewing position in response to a manual release operation, and shutter means including first and second blind members which are respectively biased from cocked positions to rest positions and disposed in front of said focal plane so that said first blind member in its cocked position and said second blind member in its rest position block said light from said film and so that said light is permitted to expose said film when said first blind member is released from said cocked position for movement with said second blind member maintained in its cocked position, the surface of said first blind member having a reflectively substantially equal to that of said film;

an automatic exposure control device comprising:

diaphragm control means movable from an initial position to a terminal position for varying the aperture size of said diaphragm, after the completion of the movement of said mirror to its picture taking position;

manual diaphragm setting means for presetting a first position at which said diaphragm control means is stopped;

means for manually selecting a shutter speed and for generating a first output responsive to the selected shutter speed;

means for releasing said first blind member to start the movement thereof to its rest position, after the completion of the movement of said diaphragm control means;

a light measuring circuit having light responsive means disposed for receiving said light traversing said objective lens and said diaphragm and then reflected from at least one of the surfaces of said first blind member and said film, said light measuring circuit generating a second output commensurate with the intensity of said light which in turn is commensurate with the brightness of the scene to be photographed and the aperture size of said diaphragm being varied;

automatic diaphragm setting means for determining a second position, in which said diaphragm control means is stopped, in accordance with the first and second outputs, both said automatic diaphragm setting means and manual diaphragm setting means being independently effective so that said diaphragm control means is stopped at said first position when said first position is between said initial position and said second position and at said second position when said second position is between said initial position and said first position; and

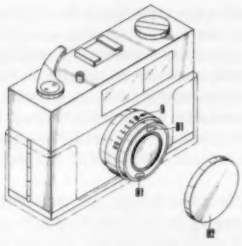
first shutter speed control means for starting the movement of said second blind member to its rest position at a time responsive to the second output, for determining a shutter speed to be actually effected.

4,142,788

POWER SOURCE SWITCH FOR USE IN A CAMERA CIRCUIT TO DETECT A FOCUSED CONDITION

Seiichi Matsumoto, Yokohama; Hideo Yokota, Tokyo, and Mutsuhide Matsuda, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 3, 1977, Ser. No. 774,116
Claims priority, application Japan, Mar. 12, 1976, 51-27583; Mar. 12, 1976, 51-27584; Jul. 30, 1976, 51-91094
Int. Cl.[2] G03B *17/20, 13/02*
U.S. Cl. 354—53 **5 Claims**



1. A photographic camera comprising:

a) a camera casing;

b) a lens barrel;

c) a detecting circuit within said camera for detecting a focused condition and for producing an output corresponding to the focused condition;

d) a display circuit connected to said detecting circuit for displaying the existence of a focused condition in accordance with the output of said detecting circuit;

e) a power source for energizing at least said detecting circuit;

f) light sensitive means provided in the lens barrel, said means producing an output when the means receives light; and

g) a semi-conductor switch connected between the power

source and said detecting circuit to form a current supply path from the power source to the detecting circuit in response to the output of the light sensitive means.

4,142,789

CHARGING MECHANISM OF A CAMERA SHUTTER

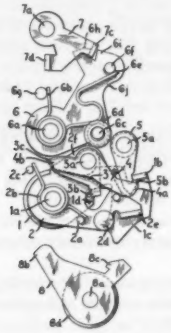
Mitsuo Koyama; Tadashi Nakagawa; Masanori Watanabe; Ichiro Nemoto, and Eiichi Onda, all of Yotsukaido, Japan, assignors to Seiko Koki Kabushiki Kaisha, Japan

Filed Dec. 16, 1976, Ser. No. 751,333

Claims priority, application Japan, Dec. 19, 1975, 50-171642[U]

Int. Cl.[2] G03B *9/06, 9/36*

U.S. Cl. 354—249 **5 Claims**



1. In a camera shutter mechanism:

an actuating lever mounted to pivot between a cocked position and rest position for actuating the camera shutter mechanism;

a spring having a first fixed portion and a second portion engaging said actuating lever for biasing said actuating lever from the cocked position to the rest position;

means for releasably holding said actuating lever in the cocked position and for releasing said actuating lever to pivot from the cocked position to the rest position; and

means for returning said actuating lever from the rest position to the cocked position; wherein said actuating lever includes a pin extending outwardly therefrom, and a resilient cylindrical bushing loosely fitting around said pin, with said pin positioned so that said spring bears against said bushing to push said bushing against said pin, and said pin positioned so that said means for returning pushes against said bushing when returning said actuating lever from the rest position to the cocked position.

4,142,790

DIAZOTYPE DEVELOPING APPARATUS WITH IMPROVED LIQUID METERING ASSEMBLY

Robert P. Neeb, Boca Raton, Fla.; Henry W. Patrick, and Ray H. Mumford, both of Raleigh, N.C., assignors to Diazit Company, Inc., Youngsville, N.C.

Filed Jan. 18, 1978, Ser. No. 870,335

Int. Cl.[2] G03D *5/06*

U.S. Cl. 354—318 **10 Claims**

1. Apparatus for developing exposed diazotype sheet material by applying a predetermined small amount of liquid developer to the sheet material, said apparatus comprising:

a frame;

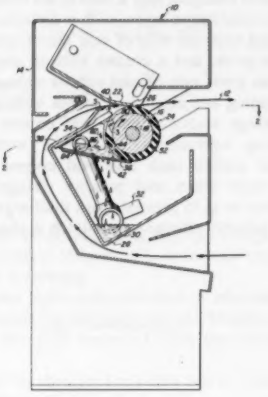
an applicator roller mounted for rotation in a given direction upon the frame, said roller having a generally cylindrical surface;

a metering blade assembly mounted upon the frame and urged against the surface of the applicator roller;

means for supplying liquid developer at a first area of the roller surface located before the metering blade assembly in a direction opposite to said given direction; and

means for urging the sheet material against a second area of the roller surface located beyond the metering blade assembly in said given direction;

said metering blade assembly including a fine mesh screen biased into direct contact with a portion of the roller surface between the first and second areas for metering



the supplied liquid developer to establish an accurately determined amount of liquid developer upon the surface of the roller as the surface passes across the screen;

said fine mesh screen including opposite surfaces, filaments intersecting at intersections along the screen, opposed flattened lands on said opposite surfaces and located on the filaments at intersections thereof, and a predetermined thickness between said opposed flattened lands.

4,142,791

ELECTROGRAPHIC APPARATUS HAVING A SCREEN-TYPE PHOTOCONDUCTIVE DRUM

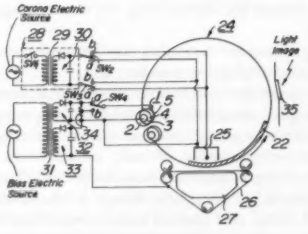
Masaji Nishikawa, and Muneo Kasuga, both of Hachioji, Japan, assignors to Olympus Optical Company Limited, Tokyo, Japan

Filed May 26, 1977, Ser. No. 800,906

Claims priority, application Japan, Jun. 7, 1976, 51/65524

Int. Cl.[2] G03G *15/00*

U.S. Cl. 355—3 SC **6 Claims**



1. An electrographic apparatus comprising a screen drum composed of a mesh-shaped photosensitive screen formed of at least photoconductive layer and an electrically conductive layer superimposed one upon the other, one corona discharge device arranged in said screen drum, a mechanism for feeding a dielectric coated record sheet arranged at the outside of said screen drum and opposed to said corona discharge device, a corona voltage source circuit, a polarity change-over switch connected between said corona voltage source circuit and said corona discharge device and, during a first turn of said screen

drum, applying a voltage having a first polarity therethrough to said corona discharge device so as to effect a first step of charging said screen drum from the side of said electrically conductive layer, and to effect a step of exposing said screen drum to a light image corresponding to a manuscript to be recorded, and during a second and following turns of said screen drum, applying a voltage having a second polarity therethrough to said corona discharge device so as to effect a second step of charging said screen drum from the side of said electrically conductive layer, with a dielectric coated record sheet located near the side of said photoconductive layer of said screen drum, and a corona voltage source switch connected to an input side of said corona voltage source circuit and for opening and closing an output voltage circuit of said corona voltage source circuit, said corona voltage source switch being operatively interlocked with said polarity change-over switch such that said corona voltage source switch is open when said polarity change-over switch is changed over so as to prevent spark discharge from occurring when said polarity change-over switch is changed over.

4,142,792

ELECTROPHOTOGRAPHIC APPARATUS

Toyokazu Satomi, and Yasuhiro Tabata, both of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Feb. 10, 1977, Ser. No. 767,257

Claims priority, application Japan, Feb. 13, 1976, 51-15263; Feb. 13, 1976, 51-15264; Feb. 17, 1976, 51-16392; Feb. 17, 1976, 51-16394

Int. Cl.[2] G03G *15/00*

U.S. Cl. 355—14 **13 Claims**

11. An electrophotographic apparatus comprising:

a photoconductive member;

charging means for electrostatically charging the photoconductive member;

exposure means for radiating a light image of a document onto the photoconductive member to form an original electrostatic image thereon;

developing means for applying a toner substance to the photoconductive member to develop the original electrostatic image into a toner image;

transfer means for transferring the toner image to a copy sheet;

cleaning means for removing residual toner substance from the photoconductive member; and

control means for consecutively sensing a characteristic of the original electrostatic image and comparing the sensed characteristic of the original electrostatic image with a predetermined value of said characteristic acceptable copies being produced when the sensed characteristic of the original electrostatic image is above the predetermined value, said control means controlling the charging means, exposure means, developing means, transfer means and cleaning means in such a moment as to repeatedly develop the original electrostatic image and transfer resulting toner images to respective copy sheets, to charge the photoconductive member and radiate said light image onto the photoconductive member to form a new electrostatic image when the sensed characteristic of the original electrostatic image is below the predetermined value, and to remove the residual toner substance from the photoconductive member before the charging means and exposure means form the new electrostatic image thereon.

4,142,793

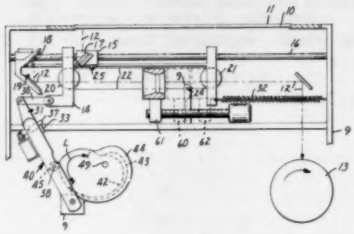
VARIABLE SPEED DRIVE APPARATUS FOR THE SCANNING SYSTEM OF A COPY MACHINE

Robert J. Schilling, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 9, 1977, Ser. No. 859,039

Int. Cl.[2] G03G *15/00*; G03B *27/36*

U.S. Cl. 355—58 **5 Claims**



1. In a copying machine for producing variable magnification copies of an original document, a variable speed drive apparatus for driving an optical scanning system at a selected speed, said copying machine including

a transparent document support platen,

a photosensitive receptor surface adapted to move at constant speed,

an optical scanning system for transmitting an image of said original document on said transparent support platen to said photosensitive receptor surface,

said variable speed drive apparatus comprising

a plurality of cams mounted for rotation with a common cam shaft,

a plurality of cam follower arms, one of said arms being associated with each of said cams, and

a plurality of selectively engageable latch means for coupling a selected follower arm to said optical scanning system.

4,142,794

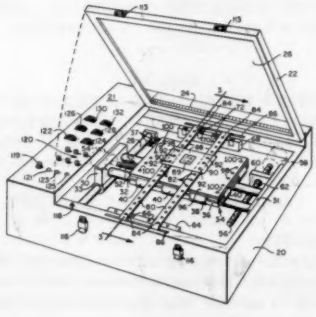
STEP AND REPEAT SYSTEM

Dennis H. Trump, Nashua, N.H., assignor to Nashua Control Instruments, Nashua, N.H.

Filed Feb. 3, 1977, Ser. No. 765,242

Int. Cl.[2] G03B *27/20, 27/04*

U.S. Cl. 355—92 **27 Claims**



1. Apparatus for repeatedly bringing a substantially planar movable light-sensitive sheet into registration with a substantially planar stationary sheet having at least a portion thereof at least partially transmissive to light so as to define a pattern thereon, said stationary sheet being mounted parallel to said

movable sheet and normally spaced therefrom, said apparatus comprising:

a frame;

a cover including a transparent pane, hingedly mounted on same frame and movable between an open and closed position;

a pair of spaced, parallel tapes spanning said frame for selectively mounting said stationary sheet in any one of a plurality of fixed positions relative to said frame;

means for mounting said stationary sheet to said tapes in any one of said plurality of fixed positions;

a stage including a first stage portion for supporting said movable sheet in confronting relation with said stationary sheet, a second stage portion and means for coupling said first and second stage portions so as to permit said first stage portion to move relative to said second stage in a direction normal to the plane of said movable sheet;

means for selectively moving said stage relative to said frame in either one of two orthogonal directions within the plane defined by said movable sheet; and

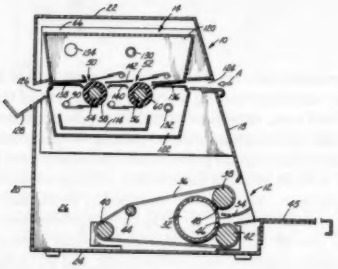
means for selectively moving said first stage portion relative to said second stage portion in said normal direction so as to fixedly position said stationary sheet between said transparent pane and said movable sheet.

4,142,795

DEVELOPER APPARATUS FOR DIAZO COPYING MACHINES

Eugene P. Oddo, Mt. Prospect, Ill., assignor to Addressograph-Multigraph Corporation, Los Angeles, Calif.

Filed Sep. 29, 1977, Ser. No. 837,742
Int. Cl.[2] G03B *27/30*; G03D *7/00*
U.S. Cl. 355—106 **7 Claims**



1. An apparatus for developing a diazotype copy sheet including a developer unit having a supply of developer liquid, comprising:

a chamber comprising an ingress and an egress for passage of a copy sheet through the chamber for development;

a first and a second roller rotably mounted in the chamber in tandem axially spaced apart parallel relation, each said roller having a surface adapted to carry a quantity of developer liquid;

means for applying developer liquid from the supply to the first and the second roller;

a first and a second blade means associated with each of the first and second rollers, said first blade means being engageable with the surface of each said roller to form a developing zone along a line of contact therebetween through which the copy sheet is passed for development, and said second blade means being engageable with the surface of each said roller for wiping excess developer liquid from the surface;

drive means for rotating the first and second rollers; and

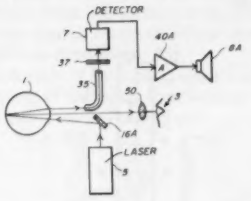
means for heating the chamber to produce an elevated temperature therewithin.

4,142,796

BLOOD FLOW MEASUREMENT

Charles E. Riva, Acton, Mass., assignor to Eye Research Institute of Retina Foundation, Inc., Boston, Mass.

Filed Apr. 20, 1977, Ser. No. 789,206
Int. Cl.[2] G01P *3/36*
U.S. Cl. 356—28 **21 Claims**



1. A method for measuring blood velocity comprising:

(a) impinging a beam of laser light on at least one vessel in which blood is flowing,

(b) detecting the light reflected with a photodetector to produce a signal representative of the Doppler shift frequencies of the light scattered from the moving blood cells,

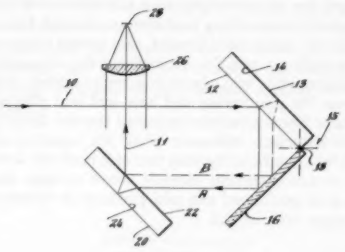
(c) producing from the signal an audio output representative of the velocity of the blood.

4,142,797

COMMON PATH INTERFEROMETER

Robert W. Astheimer, Westport, Conn., assignor to Barnes Engineering Company, Stamford, Conn.

Filed Feb. 11, 1977, Ser. No. 767,933
Int. Cl.[2] G01B *9/02*
U.S. Cl. 356—346 **10 Claims**



1. A common path interferometer for obtaining an interferogram of a target comprising in combination

(a) a roof mirror for receiving radiation from a target having at least one element thereof comprising a transparent material of finite thickness having a partially reflective front surface and a parallel rear surface of substantially unity reflectivity,

(b) drive means coupled to said roof mirror for pivoting said roof mirror about its ridge line,

(c) detector means for generating a signal in accordance with the radiation applied thereto, and

(d) optical means having an element of substantially the same finite thickness and reflectivities of said one element of said roof mirror for reflecting and recombining the radiation obtained from said target by said roof mirror to said detector means whereby said detector generates a signal in the form of an interferogram of the target produced by said common path interferometer.

4,142,798

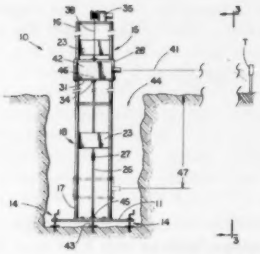
PLATFORM LASER BEAM GENERATOR SUPPORT AND ALIGNMENT APPARATUS AND METHOD FOR USING SAME

Adron W. Barbee, Jr., 2140 Hulman, Terre Haute, Ind. 47803

Filed Oct. 14, 1977, Ser. No. 842,226

Int. Cl.[2] G01C *9/18*

U.S. Cl. 356—138 **32 Claims**



1. A platform laser beam generator support and alignment apparatus for use in construction measurement and alignment, comprising:

(a) a planar base;

(b) means for leveling said base when positioned on an unlevel slope;

(c) an elongated track having an upper and a lower end thereof, said track being rigid and straight with the lower end attached to said base perpendicular to the plane thereof;

(d) a platform attached to said track and reciprocable thereon;

(e) means for mounting a laser beam generator to said platform with the generator being directed parallel to said planar base and for aligning the generator mounted thereto with an above-surface reference target distant therefrom;

(f) means for reciprocating said platform with generator mounted thereto along said elongated track between the upper and lower ends thereof, said means for reciprocating including means for maintaining the alignment of the generator while said platform is reciprocated; and

(g) means for positioning said base and said platform with the laser beam generator mounted thereto directly above a below-surface reference point for construction, said track being sufficiently long that said platform with generator mounted thereto extends above surface when said base is so positioned and said platform is reciprocated to the upper end thereof.

4,142,799

CORRECTION OF GUN SIGHTING ERRORS

Norman P. Barton, Egham, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

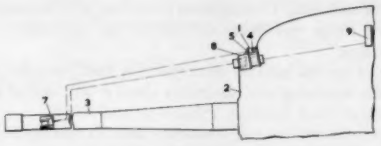
Filed Mar. 9, 1977, Ser. No. 775,695

Claims priority, application United Kingdom, Mar. 16, 1976, 10599/76

Int. Cl.[2] G01B *11/27*; G02B *27/32*

U.S. Cl. 356—153 **10 Claims**

1. Apparatus for use in compensating for gun sighting errors due to misalignment between the muzzle axis of a gun and the optical axis of an associated gun sighting system comprising a marker and a collimator mounted on the gun remotely from the muzzle adjacent to each other and in fixed relation to one another, a reflector fixed to the muzzle portion of the gun barrel so as to be capable of reflecting into the collimator an uncollimated marker beam emanating from the marker, and means for defining an initial coincidence mark whose position is fixed in relation to the said optical axis so that after leaving the collimator the reflected marker beam can form a marker image superimposed upon the said initial coincidence mark,



whereby any subsequent deviation of the muzzle axis from the said optical axis results in a corresponding movement of the marker image away from the initial coincidence mark.

4,142,800

AUTOMATIC LEVEL

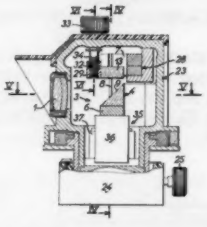
Pierre C. Paget, Ligny en Barrois, France, assignor to Essilor International (Compagnie Generale d'Optique), a French Societe Anonyme, Joinville le Pont, France

Filed Dec. 16, 1976, Ser. No. 751,037

Claims priority, application France, Dec. 18, 1975, 75 38828

Int. Cl.[2] G01C *1/00*

U.S. Cl. 356—250 **4 Claims**



1. In an automatic level comprising a case, a base supporting said case, means permitting a coarse adjustment of the horizontality of said case, an objective and an eyepiece mounted in said case so that their optical axis be parallel to each other and lie in a common horizontal plane when the case is in a horizontal position, a fixed reticule disposed in the object focal plane of the eyepiece, a compensator suspended from said case and disposed on the path of the light rays between said objective and said reticule, an image erecting optical system disposed between said objective and said reticule, and an image focusing device, and in which the compensator and the image erecting system comprise an assembly of four reflecting surfaces disposed in the fashion of a "Crova" prism or "2nd-species Porro" prism, said assembly comprising in succession on the path of the light rays an input reflecting surface, a pair of intermediate reflecting surfaces and an output reflecting surface, said input and output reflecting surfaces being so disposed side by side on a support that they are oriented in directions perpendicular to each other and form an angle of 45° with the optical axis of the objective and with the optical axis of the eyepiece, respectively, when said support is in a horizontal position, said pair of intermediate reflecting surfaces being vertically spaced from said input and output reflecting surfaces and being disposed perpendicular to each other and parallel to the optical axes of said objective and eyepiece, said support being suspended from the case by means of a pair of flexion bars so selected that the input and output reflecting surfaces can rotate through an angle equal to one-half of an angle formed by the optical axes of said objective and eye-piece, respectively, with the horizontal when said case departs slightly from its horizontal position, the distance between the objective and the input reflecting surface, as measured along the optical axis of the objective, being equal to the distance between the output reflecting sur-

face and the reticule, as measured along the optical axis of the eyepiece, the improvement consisting in that: the pair of intermediate reflecting surfaces is secured to another support movable substantially vertically within the case, control means are provided for adjusting the vertical position of said other support and of said pair of intermediate reflecting surfaces secured thereto, whereby said pair of intermediate reflecting surfaces and said control means can act as said focusing device, and adjusting means are provided for allowing to set the vertical position of said input and output reflecting surfaces in relation to the optical axes of said objective and eyepiece, so that said optical axes intersect said input and output reflecting surfaces, respectively, in a common vertical plane perpendicular to said optical axes.

4,142,801

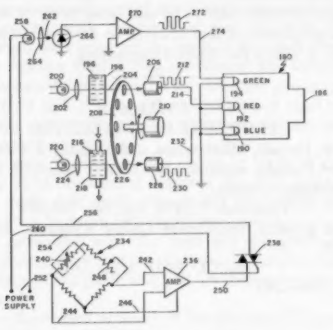
SPECTRAL COLOR GENERATOR

William E. Calder, and William L. Robertson, both of 1381 Palm Ave., San Diego, Calif. 92154

Continuation-in-part of Ser. No. 536,342, Dec. 26, 1974, Pat. No. 3,994,597. This application Oct. 1, 1976, Ser. No. 728,754

Int. Cl.[2] G02B *23/10*

U.S. Cl. 356—251 **18 Claims**



1. A spectral color generator comprising:

housing means having light output means and a light source including a plurality of individual light emitting diodes each having a light output of a distinct primary color different from the others;

means including a block of transparent material for combining the outputs of said light emitting diodes at least at said light output means for producing an output color;

and illumination control means including a source of electrical power connected to each diode and means for varying the power to each diode for infinitely varying the output intensity of each of said individual light emitting diodes while maintaining color purity for thereby varying the output color.

4,142,802

METHOD AND APPARATUS FOR MEASURING VARIATIONS IN COMPOSITION IN BINARY AND TERNARY SEMICONDUCTORS UTILIZING ELECTROLYTE ELECTROREFLECTANCE

Fred H. Pollak, New York, N.Y., and Paul M. Raccah, Chicago, Ill., assignors to Yeshiva University, New York, N.Y.

Filed Nov. 30, 1977, Ser. No. 855,831

Int. Cl.[2] G01J *3/42*; G01N *21/48*

U.S. Cl. 356—319 **10 Claims**

1. A method of determining the compositional homogeneity at the surface of an alloy semiconductor comprising the steps of:

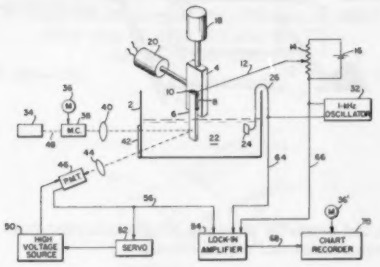
(a) immersing the alloy semiconductor in an electrolyte and applying an electric field having D.C. and A.C. components therein to the surface of interest,

(b) directing light radiation having a swept wavelength toward a spot on said surface, and measuring the light reflected from said spot to determine the wavelength at which a peak occurs in a selected optical structure,

(c) determining the composition of said spot from reference data indicative of the wavelength at which peak reflectance is achieved as a function of composition,

(d) repeating steps (b) and (c) for an array of spots on said surface spaced from one another at distances commensurate with the desired resolution of the compositional homogeneity to be determined, and

(e) recording regions of uniform compositional homogeneity corresponding to the spot compositions determined in successive performances of step (c).



8. Apparatus for determining surface composition characteristics of an alloy semiconductor sample comprising an electrolyte electroreflectance system for directing light radiation having a swept wavelength through a range of wavelengths associated with a selected optical structure toward a spot on the surface of said sample and measuring the light reflected therefrom as a function of wavelength, said system including an electrolyte in which said sample is immersed and means for applying an electric field having D.C. and A.C. components therein to the surface of said sample, means for moving relative to each other in discrete steps said sample and said light radiation such that said light impinges on successive discrete spots on said surface, and means for recording the measured light reflected from each discrete spot on said surface as a function of wavelength.

4,142,803

RECYCLED ASPHALT-AGGREGATE PROCESS AND APPARATUS

Robert L. Mendenhall, 1770 Industrial Rd., Las Vegas, Nev. 89102

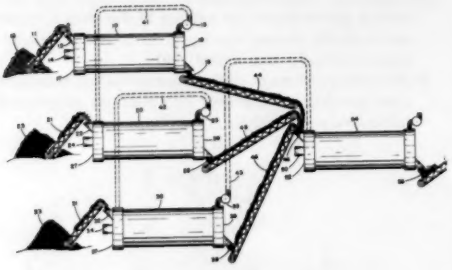
Division of Ser. No. 729,705, Oct. 5, 1976, Pat. No. 4,096,588, which is a continuation-in-part of Ser. No. 603,357, Aug. 11, 1975, Pat. No. 3,999,743. This application Jan. 9, 1978, Ser. No. 867,700

Int. Cl.[2] B28C *1/22*

U.S. Cl. 366—25 **3 Claims**

1. An apparatus for recycling asphalt-aggregate composition comprising a plurality of elongated rotatable heating and mixing drums, each having a composition input end and an oppo-

site output end, a burner for introducing hot gas in each of said drums, means for exhausting said hot gas from each of said



drums, and means for directing hot gas exhausted from one of said drums to another of said drums.

4,142,804

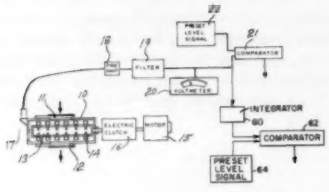
APPARATUS AND PROCESS FOR FLUXING A MIXABLE THERMOPLASTIC MATERIAL

Zenas Crocker, Wellesley Hills, Mass., assignor to Lewis Specialties Limited, Montreal, Canada

Continuation of Ser. No. 610,831, Sep. 5, 1975, abandoned. This application Dec. 20, 1977, Ser. No. 862,596

Int. Cl.[2] B29B *1/06*

U.S. Cl. 366—77 **16 Claims**



1. In a process of fluxing a polyvinylchloride compound wherein a batch of a blend of the compound and other ingredients is fed into a high intensity mixer and mixed until the required state of flux is achieved, the improvement comprising the steps of monitoring vibration in the mixer as the compound becomes fluxed and automatically discharging the batch from the mixer when the vibration reaches a preset level.

4,142,805

METHOD FOR PROCESSING POLYMERIC MATERIAL

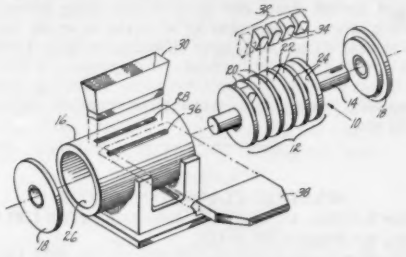
Zehev Tadmor, Teaneck, N.J., assignor to USM Corporation, Farmington, Conn.

Continuation-in-part of Ser. No. 654,040, Feb. 2, 1976, abandoned. This application May 11, 1977, Ser. No. 795,211

Int. Cl.[2] B01F *7/10*; B29B *1/06, 3/02*

U.S. Cl. 366—97 **16 Claims**

1. In the method of processing of plastic and polymeric materials which are, or become in the course of processing, viscous liquids including the steps of dragging the material by one wall relative to another for processing and discharge, the improvement which comprises introducing said material at a feed point into a channel between opposed walls moving simultaneously toward a discharge point, retaining said material in said channel by a surface, blocking said channel adjacent said discharge point to restrain the main body of said material from movement with said walls to create relative movement between the main body of said material and said walls, dragging forward viscous liquid portions of said material in contact with said walls and collecting said viscous liquid portions as a pool



of viscous liquid against said blocking for processing and discharge, and coordinating the rate of discharge of material from said channel with the surface area and the rate of movement of said opposed walls relative to said main body of material and with the properties of said material to develop pressure in said pool and to effect the desired processing.

4,142,806

FLUID SHEAR EMULSIFIER

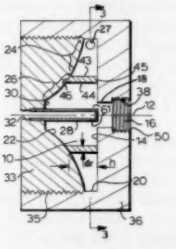
Charles F. Peczeli, Mississauga, and Anthony J. Last, Oakville, both of Canada, assignors to Ontario Research Foundation, Mississauga, Canada

Filed Jul. 7, 1976, Ser. No. 703,259

Claims priority, application United Kingdom, Jul. 9, 1975, 28938/75

Int. Cl.[2] B01F *3/12, 5/04*

U.S. Cl. 366—341 **12 Claims**



1. A fluid shear device comprising a shear chamber having a central axis, the chamber being substantially radially symmetrical and including a forward wall having at least an inner portion perpendicular to said axis, a central axial cylindrical outlet passageway through said inner portion of the forward wall and defining a substantially sharp corner therewith, a peripheral wall adjoining said forward wall, a rearward wall having a first portion extending inwardly from said peripheral wall and forming at most a small acute angle with said inner portion of the forward wall, and a second portion of said rearward wall extending rearwardly and inwardly from the first portion and defining a greater angle with said inner portion of the forward wall, whereby the axial dimension of said shear chamber increases with diminishing radius at a greater rate in said second then in said first portion of the rearward wall; an inlet opening tangentially through the peripheral wall, the forward wall and the said first portion of the rearward wall being closely juxtaposed about opposite sides of said inlet.

4,142,807

SPLINED JOINT

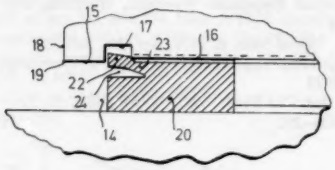
Leslie G. Fisher, Birmingham, and Ivor G. Sankey, Sutton Coldfield, both of England, assignors to GKN Transmissions Limited, Birmingham, United Kingdom

Filed Oct. 11, 1977, Ser. No. 840,563

Claims priority, application United Kingdom, Apr. 16, 1977, 15924/77

Int. Cl.[2] F16D *1/06*

U.S. Cl. 403—13 5 Claims



1. In a splined joint between a rotary shaft having a plurality of axially extending radially outwardly projecting teeth spaced apart angularly about the rotational axis of the shaft, and a muff or sleeve having a plurality of axially extending radially inwardly projecting teeth spaced apart angularly about the rotational axis of the muff, the teeth of each of these members fitting in the grooves between the teeth of the other member to provide for relative axial sliding movement and torque transmission between the members, with the shaft projecting outwardly from an end of the muff, said shaft and muff defining between them a generally annular chamber adjacent said end, the improvement comprising:

a. a guide ring disposed in said chamber, so as to constrain relative radial movement between the shaft and that end of the muff, said guide ring being of a relatively rigid material for resisting said radial movement,

b. means associated with the muff and the guide ring for establishing a measured close tolerance between the external surface of the guide ring and the internal surface of the muff, and

c. means independent of the shaft for retaining the guide ring in position in the chamber.

4,142,808

TIRE CHAIN TENSIONING DEVICE

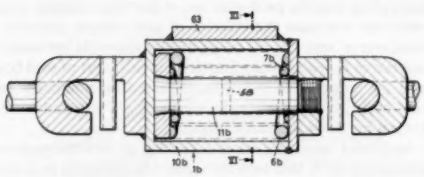
Anton Müller, Aalen-Unterkochen, and Helmut Magiera, Aalen-Hofherrnweiler, both of Fed. Rep. of Germany, assignors to Eisen- und Drahtwert Erlau Aktiengesellschaft, Aalen, Fed. Rep. of Germany

Filed May 31, 1977, Ser. No. 801,757

Claims priority, application Fed. Rep. of Germany, May 28, 1976, 2623827

Int. Cl.[2] F16B *7/12*

U.S. Cl. 403—166 16 Claims



1. In a tensioning device for a tire chain having two link pieces serving for joining members of the tire chain having therewith a housing including a guide part, a pair of pressure springs having ends installed in said housing and securely positioned by said guide part for movement against each other as far as into an extended positioning as well as supported against counter bearings therewith, one of the counterbearings being arranged against ends of said pressure springs away from the link pieces, releasable arresting means to hold the link pieces in extended positioning, the improvement in combination therewith comprising said ends of both pressure springs being located substantially at equal level at a time, said ends of the pressure springs having counter bearings arranged in common therewith which are remote from the link pieces belonging thereto, securing means provided to hold the arresting means on the guide part for the pressure springs, and an arresting face surface on the housing with which said securing means cooperates as well as at least one receiving means arranged on the guide part.

4,142,809

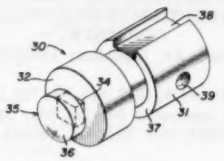
CONNECTOR ASSEMBLY

Irving W. Shell, 442 Wellington Ave., Chicago, Ill. 60657

Filed May 17, 1978, Ser. No. 906,777

Int. Cl.[2] F16B *9/02*

U.S. Cl. 403—201 10 Claims



1. A connector for coupling first and second members wherein the first member has a keyhole aperture therein with an enlarged round upper head portion and a small rectangular neck portion, said connector comprising a cylindrical body having a projection extending axially from one end thereof, said projection having a neck of square transverse cross section dimensioned non-rotatably to fit into the neck portion of the first member and an enlarged rounded head dimensioned to fit into the head portion of the keyhole aperture of the first member but to prevent passage through the neck portion thereof, said body having a bore extending radially thereinto for receiving therein the second member, whereby said connector is non-rotatably mountable in the keyhole aperture of the first member in any of four different orientations respectively carrying the second member for extension upwardly or downwardly or laterally to either side.

4,142,810

RAPID FIXING DEVICE FOR AN ELECTRICAL CONNECTOR AND AN ELECTRICAL CONNECTOR COMPRISING THIS DEVICE

Emile Lesaint, Suresnes, France, assignor to Socapex, Suresnes, France

Filed Nov. 23, 1976, Ser. No. 744,278

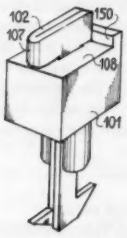
Claims priority, application France, Nov. 28, 1975, 75 36608

Int. Cl.[2] F16B *9/00*

U.S. Cl. 403—252 16 Claims

1. In combination, an electrical connector, and a rapid fixing device for fixation in one wall of said connector which is provided with fixing openings, said connector comprising a socket formed by a block of insulating material having a fixing surface and lateral surfaces, said device being formed on the one hand by a plurality of hooks of which the introduction in said openings ensures said fixing, and formed on the other hand by means for rendering said hooks integral with said block, said means respectively carried by said hooks and said block, each hook comprising a base lever and a coupling nose, assembled in pairs with their opposite coupling noses, by a link member joining the base levers at their ends opposite said noses, in an overlapping arrangement, their link member being

made in one piece with and from the same material as said hooks, wherein said link member is formed by an element with



two arms in the form of a U, said arms being perpendicular to said base levers.

4,142,811

ONE-PIECE LOCKING AND RELEASING HUB ACTUATED WITH THRUST-MULTIPLYING SCREW ASSEMBLY

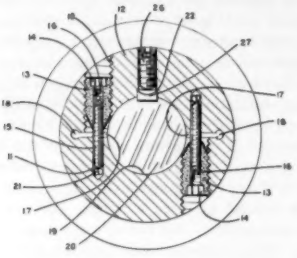
J. Kellogg Burnham, Av. Republicas 153-BIS, Mexico City, Mexico

Filed May 9, 1977, Ser. No. 795,215

Claims priority, application Mexico, May 31, 1976, 164778; Jun. 21, 1976, 165202; Nov. 11, 1976, 166985; Nov. 30, 1976, 167236

Int. Cl.[2] F16B *2/02*

U.S. Cl. 403—290 **8 Claims**



1. A one-piece hub which is optionally integral with a pulley, gear or other working member, having a body and a bore of variable effective diameter within narrow limits and adapted for seizing and releasing a shaft inserted into said bore, said hub bore having slots which are contractile and expandable and extend radially from said hub bore and said hub body and lengthwise of said hub bore, said slots terminating in a preferably rounded shape, extending lengthwise of the said hub and being traversed by tapped screw-holes generally perpendicular to said slots and approximately tangent to said hub bore, each screwhole having one tapped diameter on one side of said slot and a larger coaxial tapped diameter on the opposite side of said slot extending to a surface of said hub body, the pitch of the threads in the said two diameters of screwhole being substantially similar, the smaller diameter hole containing a headless screw turned thereinto and means locking said headless screw against rotation, said headless screw extending across said slot a sleeve screw having internal threads engaging said headless screw and having external threads engaging the threads in the larger coaxial screwhole, said sleeve screw having a socket on its outer end adapted for wrench engagement and a tapered inner end, said sleeve screw being adapted for simultaneous advance in its external threads and its internal threads when rotated, the compound differential pitch action depending upon differential advance of said sleeve screw along its inner and outer threads respectively, and being adapted to produce multiplied mechanical advantage in the contraction of said hub slot in one direction of rotation of said sleeve screw producing seizure of said hub bore upon said shaft placed therein, and expansion of said hub slot with the opposite rotation of said sleeve screw, whereby powerful expansion of said hub bore results from expansion of said slot and said shaft is thereby disengaged from said hub bore.

4,142,812

SCRAPER-CHAIN CONVEYORS

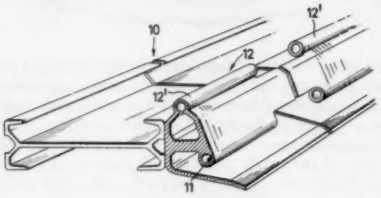
Bernd Steinkuhl, Lünen, Fed. Rep. of Germany, assignor to Gewerkschaft Eisenhutte Westfalia, Westfalia, Fed. Rep. of Germany

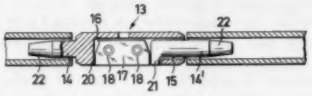
Filed Mar. 8, 1976, Ser. No. 664,580

Claims priority, application Fed. Rep. of Germany, Mar. 7, 1975, 2509921

Int. Cl.[2] F16B *7/00, 12/36;* B65G *19/22*

U.S. Cl. 403—292 **17 Claims**





1. In a scraper-chain mine conveyor having a plurality of independent channel sections arranged end-to-end and interconnected, each channel section having a guide rail affixed along the length of one of its sides to support a machine movable along the conveyor, an improved guide rail and removable guide rail spanning means for smoothly bridging the changing gap between adjacent guide rails comprising:

(a) each guide rail having a tubular portion disposed lengthwise thereon, each said tubular portion being shorter than its respective guide rail, each said tubular portion having end openings recessed from the leading and trailing ends of the guide rail;

(b) guide rail spanning means including a plurality of spanning devices each having a body of approximately the same cross-sectional shape and size as the exterior of said tubular portion;

(c) each said body having two axially aligned and oppositely extending spigots, each said spigot having a smaller cross-sectional size than the interior of said tubular portion, at least one of said spigots being axially movable between an operative position extending substantially out of said body and an inoperative position retracted substantially into said body, said spanning device having a reduced overall length in the inoperative position;

(d) each said spanning device having an extension means associated with said movable spigot to maintain said movable spigot in its extended operative position; and

(e) each said spanning device being inserted between two adjacent guide rails, one of said spigots extending telescopically into said tubular portion of one guide rail, said extension means adjustably permitting the other of said spigots to first move axially to its retracted inoperative position within said body to reduce the overall length of said spanning device and to align said other spigot with said tubular portion of the adjacent guide rail, said exten-

sion means adjustably permitting said other spigot to then axially move to and be maintained in its extended operative position telescoped into said tubular portion of the adjacent guide rail to smoothly bridge the changing gap between and axially align the adjacent guide rail tubular portions.

4,142,813
SADDLE CARRIAGES

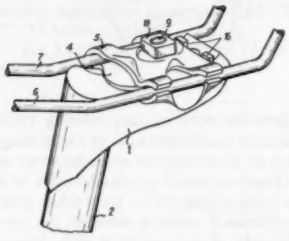
Jean E. Laborde, Arudy, France, assignor to Les' Usines Laprade, Arudy, France

Continuation of Ser. No. 664,274, Mar. 5, 1976, abandoned. This application Feb. 10, 1978, Ser. No. 876,744

Claims priority, application France, Mar. 10, 1975, 75 07348; Dec. 3, 1975, 75 36933

Int. Cl.² B25G *3/36*

U.S. Cl. 403—391 **15 Claims**



1. A saddle carriage of the cradle and jaw type comprising an integral support and stem, said support provided with a substantially horizontal, upwardly concave, cylindrical sector overhanging laterally in relation to said stem, said support having placed thereon an assembly of upper and lower jaws adapted to encompass saddle wires of a saddle, the lower jaw being formed at its lower end with a convex, cylindrical sector complementary to the cylindrical sector of the support, a single screw for longitudinal movement only, disposed laterally relative to said stem, and extending upwardly through openings in said support and jaw assembly from bottom to top for fastening said jaw assembly to said support, and a fastening member on the upper jaw for securing said screw at its top end, and wherein said convex, cylindrical sector of said lower jaw has an enlarged opening therein through which said screw passes for allowing a change of position of said jaw assembly relative to said support without lateral movement of said screw.

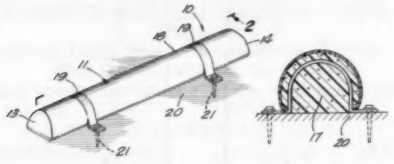
4,142,814
PARKING AREA DIVIDER

Richard E. Sanchez, 8548 Manatee St., Downey, Calif. 90240

Filed Jun. 17, 1977, Ser. No. 807,582

Int. Cl.² E01C *11/22*

U.S. Cl. 404—7 **4 Claims**



1. A parking lot surface space marker, comprising:
an elongated foam core having at least one longitudinally extending flat surface;
a plastic cover received over said core conforming to the core periphery except for said core flat surface;
strap means received transversely about said core and cover for securing the core flat surface against said parking lot surface; and
a reinforcing rodlike member received in said core extending longitudinally thereof.

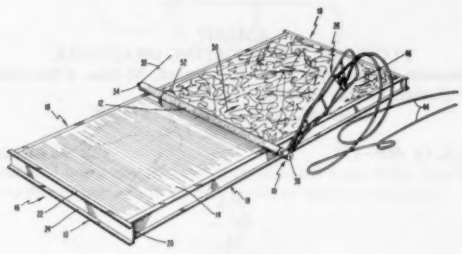
4,142,815
CONCRETE SLAB STRIKER

David C. Mitchell, P.O. Box 541, Burley, Id. 83318

Filed Nov. 28, 1977, Ser. No. 855,788

Int. Cl.² E01C *19/28*

U.S. Cl. 404—103 **1 Claim**



1. A concrete slab striker for grading the surface of a plastic concrete slab, comprising:
an elongated roller for engaging the surface of the concrete slab to be graded;
a form bordering said concrete slab and adapted to support said roller in engagement with the concrete surface;
a manually movable support frame connected to only one end of said roller to allow push-pull control of the roller by one man from the side of said form;
a motor mounted on said support frame and connected to drive said roller, said motor for rotating said roller as it is moved across said form in a direction opposite to the direction of travel of said roller;
a reverse switch mounted on said support frame and coupled to said motor to permit the direction of rotation of said roller to be reversed;
a manual pull device coupled to the opposite end of said roller to allow auxiliary pull control of the roller.

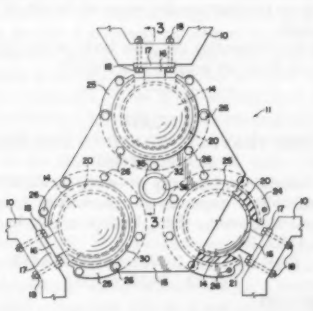
4,142,816
BREAKWATER INTERCONNECTING DEVICE

James H. Kramer, Akron, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Feb. 1, 1978, Ser. No. 874,100

Int. Cl.² E02B *3/04*; F16C *11/06*

U.S. Cl. 405—26 **7 Claims**



1. An interconnecting device for a breakwater comprising a

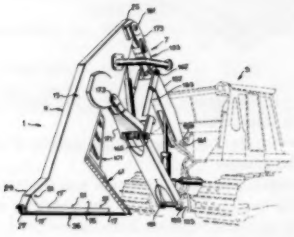
pair of spaced tubular members operative to conduct fluid from one tubular member to the other of said tubular members, said one tubular member having one end integral with a spherical ball element, said one tubular member extends centrally through said spherical ball element for communication with the other one of said tubular members, a flange on the other end of said one tubular member, a pair of interconnected hemispherical flanged members encompassing said spherical ball element, a hollow spherical rubber member integral with said pair of hemispherical flanged members abuttingly contacting said spherical ball element, and one of said hemispherical flanged members having said other tubular member integral therewith for communication with said one tubular member.

4,142,817

PLOW FOR USE IN LAYING DRAIN-TILE

Germain Lazure, 105 Ave. Beauregard, St-Jean d'Iberville, Quebec, Canada (J2X 2L9)

Filed Jan. 19, 1978, Ser. No. 870,736
Int. Cl.[2] F16L *1/00*
U.S. Cl. 405—174 **23 Claims**



1. A plow for use in laying a draintile, comprising:

a narrow plow body including an upright elongated portion having a leading edge, and a triangular portion at the bottom, front end of said upright portion, said triangular portion being fixed relative to and projecting forwardly from said upright portion, and having an angled leading edge thereon that extends forwardly and downwardly from said leading edge of said upright portion, the bases of said upright and triangular portions forming the base edge of the plow;

means within the plow for guiding the drain-tile from an inlet high in the upright portion to an outlet at the bottom, rear of the upright portion;

an elongated plow blade having a generally flat upper surface and having a tip on its front, lower end;

securing means for detachably fixing said plow blade to the angled leading edge of said triangular portion of the plow body, said securing means being constructed and arranged to allow incremental adjustment in the position of the plow blade relative to said leading edge of said triangular portion, to compensate for wear of the tip of said plow blade; and

a linkage for connecting the plow body at two spaced-apart points on its upper portion to a tractor.

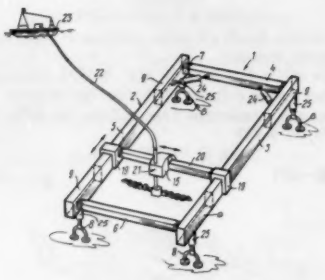
4,142,818

DEVICE FOR TRAVELLING ALONG THE BASIN AND SEA BOTTOM

Georgy M. Lezgintsev, Leninsky prospekt, 39, kv. 257; Stanislav J. Istoshin, ulitsa Koptevskaya, 26, korpus 3, kv. 69, and Mikhail A. Belyavsky, ulitsa Butlerova, 10, kv. 81, all of Moscow, U.S.S.R.

Filed Mar. 14, 1977, Ser. No. 777,412
Int. Cl.[2] B63C *11/00*
U.S. Cl. 405—191 **3 Claims**

1. A device for travelling along the bottom surface of a basin, comprising: a housing made in the form of a polygon with sides connected to each other by hinges; supports connected to said housing, retaining said housing above the bottom surface and positioned near the hinges where the sides of said housing are articulated; tanks mounted on at least two sides of said housing near the supports; filling fluid sources with inlet and outlet pipes associated with said tanks to produce a positive or a negative buoyancy of the portion of the housing in which the respective tank is included; power hydraulic cylinders, for rotating said housing relative to said supports, connected to adjacent sides of the housing in a region near the hinges, so as to vary the angle between said adjacent sides; and, carriages mounted on parallel sides of the housing, said carriages being connected to each other with a crossbar which accommodates a working member, the carriages being mounted on the sides of the housing in such a manner that they can reciprocate along the respective sides.

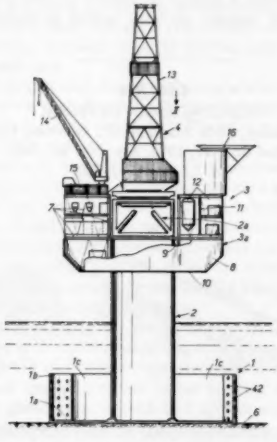


4,142,819

PLATFORM FOR INSTALLATION AT SEA OR ON A BODY OF WATER

André P. A. Challine, Paris; Alain M. E. Marchal, Vincennes, and Vincent F. P. Foglia, Aulnay-sous-Bois, all of France, assignors to Compagnie Generale pour les Developpements Operationnels des Richesses sous-Marines "C.G.Doris", Paris, France

Filed Nov. 30, 1977, Ser. No. 856,050
Claims priority, application France, Dec. 3, 1976, 76 36507
Int. Cl.[2] E02B *17/02*
U.S. Cl. 405—196 **8 Claims**



1. A gravity platform for supporting installations above a body of water, comprising a base having a slab adapted to rest on the bed of the body of water, and a peripheral wall forming therewith a float having a buoyancy sufficient to support the

assembly of the platform and the installations; a hollow column secured to the base and extending vertically therefrom; an annular bridge extending around the hollow column, having an impervious shell covering the underface and the inner and outer peripheral surfaces of the bridge to form a float having a buoyancy sufficient to support the assembly of the platform and the installations; and means for displacing the bridge along the hollow column.

4,142,820

PIVOTAL CONNECTING DEVICE FOR PIVOTALLY CONNECTING AN OFF-SHORE ARTICULATED COLUMN STRUCTURE TO A SEA BOTTOM

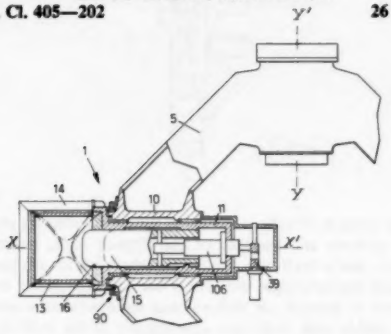
Samuel Tuson, Mesnil-le-Roi, France, assignor to Enterprise d'Equipments Mecaniques et Hydrauliques E.M.H., France

Filed Jan. 10, 1978, Ser. No. 868,299

Claims priority, application France, Jan. 13, 1977, 77 00875; Oct. 18, 1977, 77 31304

Int. Cl.[2] E02B *17/00*; B63B *21/50*

U.S. Cl. 405—202 **26 Claims**



1. A pivotal connection device adapted for connecting one end of an off-shore articulated working column to a base member resting on the sea bed, said device comprising a pair of orthogonally extending pivot axes, each pivot axis extending from opposed sides of said device, means fixedly mounted on said base member for supporting one of said pivot axes, a pair of lock-bolt members at opposed sides of said device mounted for movement along and substantially coaxially with said one of said pivot axes and a bolt-keeper means provided in said support means for bounding said lock-bolts to said support means whereby said device is pivotally mounted to said support means with respect to said one pivot axis.

4,142,821

GROUND STABILIZATION ARRANGEMENT FOR DAM EMBANKMENTS AND OTHER TERRAIN SLOPES AND THE LIKE

Erich Döring, Langer Weg 3, 8052 Moosburg, Germany

Filed Oct. 15, 1976, Ser. No. 733,024

Claims priority, application Fed. Rep. of Germany, Oct. 16, 1975, 2546430

Int. Cl.[2] E02D *3/08*

U.S. Cl. 405—258 **9 Claims**

1. A ground stabilization arrangement for a dam embankment, other terrain slope, and the like, comprising a plurality of flexible, continuous rings, each said ring having a generally flat, rectilinear cross section and a width no greater than one-twelfth of the perimeter of the peripheral surface of the ring, said rings being interconnected with their peripheral surfaces in contact and interconnected by rivets, screws, clamps or wire to form a mat-like structure which, when installed upon said terrain slope, has its said peripheral surfaces oriented generally perpendicular to said terrain slope, said mat-like structure thus

installed being substantially open and said rings being free of any flange portions oriented parallel to said terrain slope.

4,142,822

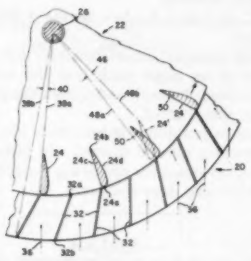
PANEMONE WINDMILL

Frank P. Herbert, 2145 Ivy St., Port Townsend, Wash. 98366, and John Ottenheimer, P.O. Box 1378, Lopez Island, Wash. 98261

Filed May 5, 1977, Ser. No. 793,926

Int. Cl.[2] F03D *3/04*

U.S. Cl. 415—2 **7 Claims**



1. A windmill comprising, a rotor having a vertical rotary axis mounted for rotation on an output shaft and a plurality of alike upright thrust vanes equally spaced apart circumferentially of said rotary axis, said thrust vanes each having an airfoil section with a nose, tail edge, leading face, and trailing lift face, and having its chord generally radial and its nose facing radially outward with respect to said rotary axis, whereby a rotor turning thrust is exerted on the lift face of those thrust vanes exposed to an incoming flow of air passing over the leading face and the trailing lift face thereof as a consequence primarily of the lift effect of the airfoil section, said rotor being open inwardly of the tail edge of the thrust vanes for air flow through the rotor, and

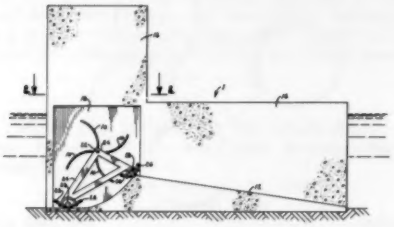
a stationary guide cage surrounding said rotor having a plurality of alike upright guide vanes equally spaced apart circumferentially of said rotary axis and arranged to direct the air in a wind front between the exposed guide vanes in a predominantly radial direction with a relatively small tangential component giving a vortex effect in the rotational direction of the rotor, the inner edges of said thrust vanes being located close to the circular travel path of the nose of the thrust vanes.

4,142,823

CURRENT POWER PLANT

James H. Nickell, Brookfield, Mo., assignor to Eugene Nickell, Brookfield; Eldon Glenn Nickell, Kansas City and Earl Jerome Nickell, Brookfield, all of, Mo., part interest to each

Filed Jul. 18, 1977, Ser. No. 816,395
Int. Cl.[2] F03D 17/00
U.S. Cl. 415—2 4 Claims



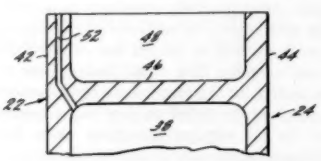
1. A water current power plant comprising:
(a) frame means;
(b) turbine means rotatably mounted on said frame means to be turned by said current;
(c) said frame means being mounted upon track mounted wheel means;
(d) track means upon which said wheel means rest and on which said wheel means may roll disposed transverse to current flow;
(e) housing means positioned over a portion of said track means;
(f) means for supplying motive force mechanically coupled to said turbine means to be driven thereby;
(g) said housing means further including a door which may be closed after said frame, turbine and wheel means are inside said housing;
(h) said track means further having a flange on its upper extremity;
(i) said track mounted wheel means further including wheels mounted at an angle such that the lower side of said wheels extends beneath and within the span of said flange on either side thereof;
(j) ramp means positioned in proximity to said turbine means for channeling current toward said turbine means;
(k) sump pump means for removing water from said housing means after said door is closed.

4,142,824

TIP COOLING FOR TURBINE BLADES

Richard H. Andersen, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Sep. 2, 1977, Ser. No. 830,267
Int. Cl.[2] F01D 5/18; F02C 7/18
U.S. Cl. 415—115 6 Claims



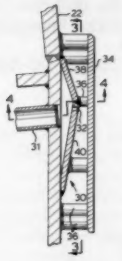
1. A turbomachinery blade having spaced radially extending side walls defining an open radially outward end, a tip cap within the open end and cooperating with the side walls to define therewith an internal coolant cavity, the radial extremities of the side walls extending outwardly of the tip cap and means for routing coolant from said internal cavity around the tip cap and through the side wall extremities to provide convective cooling thereof, said routing means comprising a multiplicity of alternating slots and ribs about the perimeter of the side wall extremities, said slots extending from the blade tip to the internal cavity, and a sleeve wrapped about the side wall extremities and defining in cooperation with the ribs and slots a multiplicity of generally radially extending open-ended channels.

4,142,825

DRAFT TUBE AERATION WITH EDUCTOR

Paul Koeller, Dorval, Canada, assignor to Dominion Engineering Works Limited, Lachine, Canada

Filed Oct. 26, 1977, Ser. No. 845,543
Claims priority, application Canada, Nov. 26, 1976, 266671
Int. Cl.[2] F01D 25/30
U.S. Cl. 415—116 4 Claims



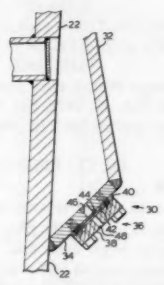
1. A turbo hydraulic machine of the type including pumps, pump-turbines and turbines of the Francis type, having an impeller, and a draft tube located therebeneath for the passage of liquid therethrough, air supply me ans connected to said machine to provide air thereto, and air admission means located within said draft tube substantially at the wall thereof having a plurality of discrete shrouded apertures spaced about the inner periphery of the draft tube connected to said air supply means each said aperture comprising a venturi arrangement having an inclined plate member in airflow inducing relation responsive to the flow of working liquid therepast to supply air to the draft tube in flow stabilizing relation with liquid flowing therethrough.

4,142,826

DRAFT TUBE AERATION WITH CHECK VALVES

Paul Koeller, Dorval, Canada, assignor to Dominion Engineering Works Limited, Lachine, Canada

Filed Oct. 26, 1977, Ser. No. 845,544
Claims priority, application Canada, Nov. 26, 1976, 266670
Int. Cl.[2] F01D 25/30
U.S. Cl. 415—116 6 Claims



1. A turbo-hydraulic machine having a casing, a runner rotatably mounted within the casing, a draft tube positioned to

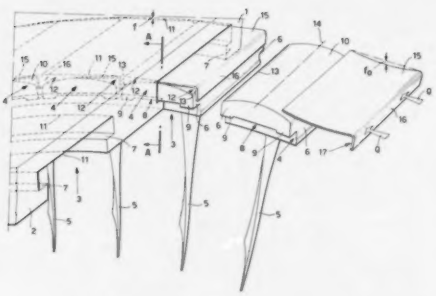
receive working liquid on passage thereof through said runner, air box means within said draft tube at the inner wall surface thereof having a slender profile and slender aspect ratio to create minimal disturbance to the flow of liquid in the tube, including a downstream face inclined to provide separation of liquid therefrom, having air outlet apertures therein, and valve means located adjacent said air outlet apertures to permit the outflow of air therepast, being responsive to the directions of liquid flow, to impede the ingress of said working liquid within said box.

4,142,827

SYSTEM FOR LOCKING THE BLADES IN POSITION ON THE STATOR CASE OF AN AXIAL COMPRESSOR

Constantino Vinciguerra, Florence, Italy, assignor to Nuovo Pignone S.p.A., Italy

Filed Jun. 1, 1977, Ser. No. 802,468
Claims priority, application Italy, Jun. 15, 1976, 24337 A/76
Int. Cl.[2] F01D *9/04*
U.S. Cl. 415—189 **4 Claims**



1. In an axial compressor having blades and a semi-cylindrical stator case with circumferential dovetailed guides on the interior thereof for receiving the feet of the blades until such guides are filled, means for locking the blades in position, comprising:

blades wherein each blade has a foot with lateral edges which rest on the guides, and a back which is curved transversely in the same direction as the curvature of the semi-cylindrical case so as to form therewith an interspace that is symmetrical about the central longitudinal region of said back and which progressively narrows until it reaches a minimum thickness at said cenral region,

curved springs wherein each spring is located in the interspace between a foot and the case and has approximately the same width as the back of a foot, and a curvature opposite and approximately equal to that of said semi-cylindrical case for biasing the blade radially inward by exerting a pressure along the central region of the back of the foot, thereby thrusting said blade against the guide and locking the blade in position, and wherein each spring has a lip bent in the opposite direction to said curvature for assembly and disassembly of the blades.

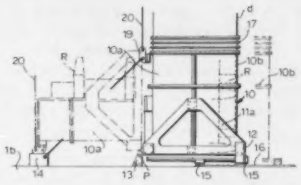
4,142,828

OPENABLE ROTOR CHAMBER CONSTRUCTION FOR A VERTICAL BLOWER

Ken Tsushima, Nagasaki, and Hisashi Takahashi, Nakayo, both of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 4, 1977, Ser. No. 784,627
Claims priority, application Japan, Jun. 4, 1976, 51-71508[U]
Int. Cl.[2] F23J *11/00*
U.S. Cl. 415—201 **5 Claims**

1. An openable rotor chamber structure for a vertical blower disposed on a floor provided within the base section of a smokestack for exhausting gas within a flue and discharging it to the stack, said blower having the rotor shaft positioned vertically, said structure comprising a generally cylindrical rotor chamber having a vertical longitudinal axis and two equal vertically extending longitudinal casing portions detachably joined along a vertical transverse dividing plane including the vertical longitudinal axis of the chamber, one of the casing portions having the parts of the blower mounted therein, pivotal mounting means on the bottom of said one casing portion



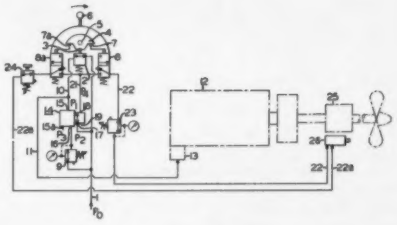
pivotally mounting said one casing portion on the floor within the base section of the smokestack for pivotal movement around a horizontal axis in said pivotal mounting means in a direction away from the other casing portion, and the other of said casing portions having no blower parts mounted therein being mounted for horizontal movement away from said one casing portion in a direction transverse to said dividing plane while remaining in the vertical position.

4,142,829

COMPOUND REMOTE CONTROL DEVICE FOR THE PROPULSION ENGINE OF A SHIP'S VARIABLE-PITCH PROPELLER

Hiroo Inoue, Amagasaki, and Makoto Takagi, Kobe, both of Japan, assignors to The Nippon Air Brake Co., Ltd., Kobe, Japan

Filed Jan. 27, 1977, Ser. No. 762,977
Int. Cl.[2] B63H *3/10*
U.S. Cl. 416—25 **1 Claim**



1. A compound remote control device having control devices for the control of engine speed and the pitch of a variable-pitch propeller by means of fluid signals, the fluid pressure being controlled in accordance with the position of a control lever, comprising, a fluid pressure source having a fixed pressure, a pressure-control valve receiving pressure from said source and transmitting a speed control pressure from an outlet in accordance with the position of said control lever, a relay operator valve for conversion of said control pressure into a propeller pitch control pressure, said relay operating valve comprising a first piston subject to pressures in first and second chamber of a first pair of opposing pressure chambers, a pressure reducing valve communicating said source to said first chamber, an inlet communicating said fixed pressure source to said second chamber, an exhaust port, a delivery port communicating said inlet port and said second chamber and said exhaust port to a propeller pitch control line, valve means operable in response to movement of said first piston in a direction opposing pressure in said first chamber to sever communica-

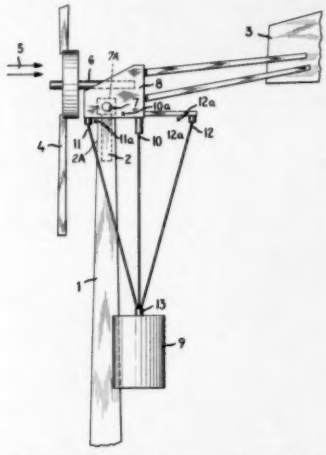
tion of said inlet port with said exhaust port, said second chamber and said delivery port, and open communication between said exhaust port, said second chamber and said delivery port, and operable in response to movement of said first piston in a direction opposing pressure in said second chamber to sever communication of said exhaust chamber with said inlet port, said second chamber and said delivery port, and, open communication between said inlet port, said second chamber and said delivery port, a second piston subject to pressure in a second pair of opposing pressure chambers, one of said second pair of opposing pressure chambers subjected to a predetermined pressure, the other of said second pair of opposing pressure chambers being communicated with said speed control pressure, and means interlinking said first and second pistons so that pressure in said other of said second pair of opposing pressure chambers adds to the pressure in said first chamber.

4,142,830

MECHANICAL OVERLOAD SYSTEMS FOR WIND GENERATORS

Walter Schonball, Thuringerstrasse 6, D-53 Bonn, Fed. Rep. of Germany

Filed Dec. 20, 1976, Ser. No. 752,088
Int. Cl.[2] F03D *7/04*
U.S. Cl. 416—41 **2 Claims**



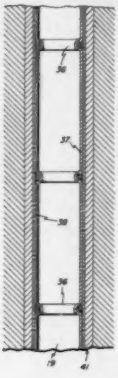
1. A wind operated power generator drive unit, comprising;
a first, normally horizontal axle;
a wind wheel secured to an end portion of the axle for driving, in use, a power generator;
means for keeping the axle parallel to a wind direction; and
a support, comprising, a second axle disposed horizontally and in a plane transversely of the first axle, means for supporting the first axle and the wind wheel thereon in unstable balance from the second axle for a reversible upward movement of the first axle and of the wind wheel thereon under a high pressure of the wind, balancing means comprising a weight for balancing the first axle and the wind wheel thereon relative to the second axle, and means having three cables attaching the balancing weight to the first axle in such a way that a balancing force acts against the upward movement of the first axle and of the wind wheel thereon to normally keep the first axle and wind wheel in a predetermined position relative to the second axle and to return them to such predetermined position after their upward movement when the high pressure of the wind ceases, said three cables consisting of a center cable depending downwardly on which said weight is suspended disposed rearwardly of said second axle, a second cable connected intermediate said wind wheel and said second axle effective to apply said balancing force downwardly as said wind wheel tilts upwardly, and a third cable remote from said second cable with said outer cable between said second cable and said third cable effective to apply a balancing force to keep the first axle and windwheel in said predetermined position when the wind wheel tilts downwardly.

4,142,831

LIQUID-COOLED TURBINE BUCKET WITH ENHANCED HEAT TRANSFER PERFORMANCE

James T. Dakin, Schenectady; Kenneth A. Darrow, Sprakers, and Myron C. Muth, Amsterdam, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 15, 1977, Ser. No. 806,739
Int. Cl.[2] F01D *5/08*
U.S. Cl. 416—96 A **9 Claims**



1. In liquid-cooled turbine bucket construction comprising an airfoil-shaped portion, a platform portion and a root portion, wherein said root portion is specifically shaped for engaging a rotor structure for rotation of said bucket in a predetermined planar direction and at least said airfoil-shaped portion has a plurality of sub-surface coolant passages extending along the pressure and suction faces thereof, the improvement comprising:
said coolant passages extending spanwise of said airfoil-shaped portion;
a plurality of arcuate portions extending circumferentially along and projecting inwardly from the inner periphery of the wall of an individual coolant passage, each of said projecting portions having an arcuate length of at least about 120° and being spaced from adjacent projecting portions with each of said projecting portions lying substantially in a separate plane generally perpendicular to the wall of said coolant passage at the given station therealong, the extent and inward projection of each of said projecting portions being such as to block less than 50 percent of the area of the transverse cross-section of said individual passage with the core of said individual passage remaining open.

4,142,832

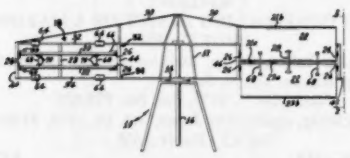
FLUID CURRENT MOTOR

Woodrow W. Clifton, P.O. Box 822, St. Augustine, Fla. 32804

Filed Apr. 25, 1977, Ser. No. 790,381
Int. Cl.[2] F03D *3/06*
U.S. Cl. 416—117 **10 Claims**

1. In an improved fluid current motor comprising a rotatable shaft substantially normal to a fluid current, a plurality of radially outwardly extending parallelepiped structural framework arms rigidly mounted to said rotatable shaft for rotation therewith, a plurality of pairs of generally planar rotor panels

respectively pivotally mounted to and within each said structural framework arm on pivotal spaced axes generally normal to said shaft, each said rotor panel including a leading portion terminating in a leading edge and a trailing portion terminated in a trailing edge, the pivotal axis of each said rotor panel being located between said leading and trailing portions and connector means for moveably connecting said leading portion of one rotor panel of each said pair of rotor panels to said trailing portion of the second panel of the same said pair of rotor panels, so constructed and arranged that impingement of a



fluid current upon the leading edge of either panel of each said pair of rotor panels will cause said pair of rotor panels to co-actingly pivot about their respective said pivotal axes into a generally non-resisting parallel spaced relationship and that impingement of a fluid current upon the trailing edge of either panel of each said pair of rotor panels will cause said pair of rotor panels to co-actingly pivot about their respective said pivotal axes to a resisting position in which the respective leading edges of each of said rotor panels in each said pair of rotor panels are closely adjacent and in which the respective trailing edges are remote.

4,142,833

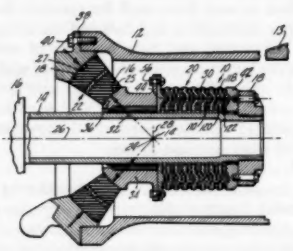
ELASTOMERIC BEARING FOR HELICOPTER ROTOR

Robert C. Rybicki, Trumbull, Conn., and Brian Cuerden, Brockenridge, Pa., assignors to United Technologies Corporation, Hartford, Conn.

Continuation-in-part of Ser. No. 628,295, Nov. 3, 1975, abandoned. This application Apr. 8, 1977, Ser. No. 785,995

Int. Cl.[2] B64C *27/38;* F16C *9/00*

U.S. Cl. 416—134 A **7 Claims**



1. In a helicopter rotor comprising:

(1) a hub mounted for rotation about an axis of rotation,

(2) at least one blade supported from said hub for rotation therewith,

(3) means connecting said blade to said hub so that centrifugal force generated by said blade during rotation is imparted therethrough to said hub to be reacted thereby, and further connecting said blade to said hub for pitch change motion with respect thereto about a blade feathering axis and for universal motion with respect thereto about a selected pivot point including:

(a) an elastomeric bearing having:

(1) a first ring-shaped race member connected to said blade for motion therewith and having a spherical surface concentric about said pivot point,

(2) a second ring-shaped race member connected to said hub and having a spherical surface concentric about said pivot point and facing said first race spherical surface,

(3) alternate ring-shaped laminates of elastomer and non-extensible material sandwiched between said first and second race spherical surfaces and with each laminate being of spherical shape concentric about said pivot point thus connecting said blade to said hub through said elastomeric bearing so that relative motion between said laminates accommodates said pitch change and universal motions between said blade and said hub, and, further so that the blade centrifugal load generated by rotation of said blade is passed therethrough to thereby establish a distributed hydrostatic pressure pattern in each elastomeric laminate which acts upon the race spherical surface and the non-extensible material laminates adjacent thereto and wherein, when said laminates and races are viewed in cross section as defined by any plane coincident with the feathering axis, the pressure patterns integrate into net applied load vectors located at the centers of pressure in each of said elastomer laminate cross-sections and acting upon the blade-side of said non-extensible material laminates and said first race spherical surface, and the pressure patterns also integrate into net reaction load vectors located at the centers of pressure in each of said elastomer laminate cross-sections and acting upon the hub side of said non-extensible material laminates and said second race spherical surface,

(4) the improvement wherein when said blade is in a zero flapping and zero lead-lag position each of said laminates and race-member spherical surfaces are concentric about the feathering axis and each non-extensible material laminate is shaped and positioned so that the angular position of its cross-sectional center of gravity with respect to the feathering axis is a selected angle ϕ_s as defined in the following equation:

$$\phi_s = 90° - \tan^{-1}\left(\frac{Z}{R}\right)$$

Where:

R is the radius to local shim cross-section center of gravity from the shim centerline and the feathering axis, and equals

$$r\left(\frac{\text{Cos } \theta_1 - \text{Cos } \theta_2}{\theta_2 - \theta_1}\right)$$

Z is the axial dimension from the bearing pivot point to the local shim cross-section center of gravity along the shim centerline and the feathering axis, and equals

$$r\left(\frac{\text{Sin } \theta_2 - \text{Sin } \theta_1}{\theta_2 - \theta_1}\right)$$

r is the mean spherical radius of the non-extensible material shim,

θ_1 is the angle from the shim centerline and the feathering axis to the shim inner edge,

θ_2 is the angle from the shim centerline and the feathering axis to the shim outer edge, so that the cross-sectional centers of gravity of all non-extensible material shims are in alignment with each other and the pivot point, and further so that each elastomer laminate is shaped and positioned so that the angular position of its cross-sectional center of pressure with respect to the feathering axis is a selected angle ϕ_E as defined by the following equation:

$$\phi_E = \mathrm{Sin}^{-1}\left(\frac{\Delta}{R}\right)$$

Where:

$$\Delta = \frac{\int_{\alpha}^{\beta} [R^2\Phi\sin\psi\tanh^{-1}(\cos\psi) + \lambda R^2\sin\psi + \gamma R^2\cos\psi\sin\psi]d\psi}{\int_{\alpha}^{\beta} [R\Phi\tanh^{-1}(\cos\psi) + \lambda R + \gamma R\cos\psi]d\psi}$$

Where: $\gamma = \frac{6G\delta R^2}{t^3}$

$$\Phi = \frac{\gamma(\cos\alpha - \cos\beta)}{(A - B)} \quad \lambda = \frac{\gamma(B\cos\beta - A\cos\alpha)}{(A - B)}$$

$$A = \ln\left(\frac{\cos\beta + 1}{\cos\beta - 1}\right) \quad B = \ln\left(\frac{\cos\alpha + 1}{\cos\alpha - 1}\right)$$

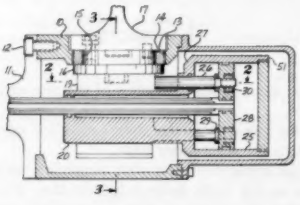
δ = axial displacement of elastomer layer under load
G = elastomer shear modulus
t = elastomer thickness
P = elastomer pressure
K = elastomer bulk modulus
R = mean radius of elastomer
ϕ_E = angular position of elastomer laminate center of pressure with respect to the elastomer laminate centerline and the feathering axis,
α = the angle from the elastomer laminate centerline and feathering axis to the laminate inner edge
β = the angle from the elastomer laminate centerline and feathering axis to the laminate outer edge
ϕ = the general angle which defines the distributed pressure acting on the elastomer laminate at the various stations between its inner and outer edge
μ = Poisson's ratio of elastomer, and where $\phi_E = \phi_s$ so that the centers of pressure in the elastomer laminate cross-sections and the cross-sectional centers of gravity of the non-extensible material laminates are in alignment with each other and the pivot point to thereby produce aligned net applied and reaction load vectors on opposite sides of each of said non-extensible material laminates and on said race spherical surfaces when the blade is so positioned with respect to the hub.

4,142,834

ADJUSTMENT MEANS FOR ACHIEVING EQUAL CRANKPIN LOADING IN A CONTROLLABLE PITCH PROPELLER MECHANISM

Arne Feroy, 1921 S. 291st St., Federal Way, Wash. 98003

Filed Jun. 3, 1977, Ser. No. 803,122
Int. Cl.[2] B63H *3/08*
U.S. Cl. 416—157 R **14 Claims**



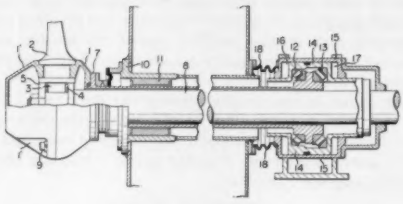
1. In a controllable pitch propeller having a propeller hub and a plurality of blades radiating therefrom, a blade turning mechanism comprising a flange on each blade and operably seated in said hub, first and second crankpins on each flange, an axially movable cylinder in said hub, operable connections between said cylinder and the first crankpins, and an axially movable piston in said cylinder, operable connections between said piston and said second crankpins, the connections between said piston and said second crankpins being slidable in a wall of said cylinder, an improvement comprising an adjustment means for connecting said piston to said connections with equal loading, said adjustment means being sized and constructed so as to provide equal spacing at each of said connections between said piston and a predetermined reference plane oriented orthogonally to the axis of said cylinder.

4,142,835

PITCH CONTROLLING DEVICE OF A MARINE PROPELLER

Naoji Hisada, Tokyo, Japan, assignor to Chuetsu Waukesha Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 7, 1977, Ser. No. 775,055
Claims priority, application Japan, Jul. 14, 1976, 51-84178
Int. Cl.[2] B63H *3/08*
U.S. Cl. 416—162 **2 Claims**



1. A pitch controlling device for the propeller blades of a marine vessel including a hull, comprising:
a solid propeller shaft;
a sleeve surrounding said propeller shaft and being movable longitudinally relative thereto;
a hub mounted to a rear end of said sleeve;
a plurality of blades mounted in said hub for rotation relative thereto about a pitch adjusting axis, each blade including a base portion at its radially inner end;
a shifter fixed to said drive shaft for rotation therewith;
said shifter disposed in said hub and including drive surfaces contacting said base portions of said blades to rotate the hub in response to rotation of said drive shaft;
means interconnecting said blades and said shifter to produce rotation of said blades about said pitch adjusting axle in response to relative longitudinal movement between said drive shaft and said sleeve;
a casing fixed to said hull;
a bearing housing movably mounted within said casing to form closed chambers therewith on opposite ends of said bearing housing, such that the introduction of pressurized fluid into either of said chambers produces movement of said bearing housing in a direction opposite such chamber; and
a pair of thrust bearings mounted in said bearing housing and supporting a front end of said sleeve such that movement of said bearing housing moves said sleeve longitudinally relative to said drive shaft to rotate said blades about their pitch adjusting axes.

4,142,836

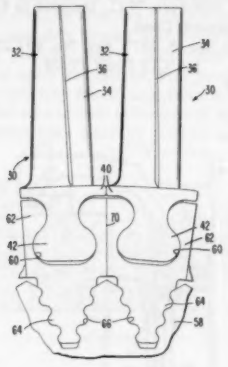
MULTIPLE-PIECE CERAMIC TURBINE BLADE

Robert G. Glenn, Huntingdon Valley, Pa., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Dec. 27, 1976, Ser. No. 755,120
Int. Cl.[2] F01D *5/30*
U.S. Cl. 416—193 A **7 Claims**

1. In a gas turbine engine: a turbine rotor disk having an outer periphery; a plurality of turbine blades; and an intermediate attachment piece for each blade, respectively, the attach-

ment pieces being coupled to the rotor disk and extending outwardly therefrom, each of said turbine blades including a pair of abutting blade parts generally coextensive with each other, each blade part having a base integral therewith and a root integral with the base, each intermediate attachment piece



having an outer peripheral groove receiving the root of a respective blade part, the bases of the blade parts of each blade being in longitudinal alignment with each other, extending fore and aft of the disk at an angle relative to the axis of the disk, and being in abuttment with the bases of blade parts of the adjacent blades.

4,142,837

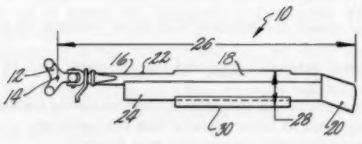
HELICOPTER BLADE

Gary J. de Simone, Stratford, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Nov. 11, 1977, Ser. No. 850,765

Int. Cl.[2] B64C 27/46

U.S. Cl. 416—223 R **16 Claims**



1. A helicopter blade having a chord, thickness, and a span and further having: A) a root portion adapted to be connected to a rotor hub, B) a tip portion defining the blade portion farthest from said root portion, C) a central portion extending between and attached to said root portion and said tip portion and cooperating therewith to define blade span and being shaped to define an airfoil of cross section in accordance with the equation throughout at least a portion of the central portion span,

UPPER SURFACE

$$0 \leqq \frac{X}{C} \leqq .05 \quad \left(\frac{Y}{C}\right)_u = \frac{t}{C}\left[1.57242\sqrt{\frac{X}{C}} + 10.8417\left(\frac{X}{C}\right) - 363.066\left(\frac{X}{C}\right)^2 + 7091.08\left(\frac{X}{C}\right)^3 - 55272.9\left(\frac{X}{C}\right)^4\right]$$

$$.05 \leqq \frac{X}{C} \leqq .5 \quad \left(\frac{Y}{C}\right)_u = \frac{t}{C}\left[3.16463\sqrt{\frac{X}{C}} - 3.70854\left(\frac{X}{C}\right)\right.$$

-continued

$$\left. + 1.21421\left(\frac{X}{C}\right)^2 - .818669\left(\frac{X}{C}\right)^3 + .325171\left(\frac{X}{C}\right)^4\right]$$

$$.5 \leqq \frac{X}{C} \leqq 1.0 \quad \left(\frac{Y}{C}\right)_u = \frac{t}{C}\left[2.51607\sqrt{\frac{X}{C}} - 2.29241\left(\frac{X}{C}\right) + .175085\left(\frac{X}{C}\right)^2 - .746467\left(\frac{X}{C}\right)^3 + .347730\left(\frac{X}{C}\right)^4\right]$$

LOWER SURFACE

$$0 \leqq \frac{X}{C} \leqq .05 \quad \left(\frac{Y}{C}\right)_L = \frac{t}{C}\left[-2.43788\sqrt{\frac{X}{C}} + 9.83555\left(\frac{X}{C}\right) - 154.251\left(\frac{X}{C}\right)^2 + 2963.11\left(\frac{X}{C}\right)^3 - 25652.7\left(\frac{X}{C}\right)^4\right]$$

$$.05 \leqq \frac{X}{C} \leqq .5 \quad \left(\frac{Y}{C}\right)_L = \frac{t}{C}\left[-1.85234\sqrt{\frac{X}{C}} + 4.20202\left(\frac{X}{C}\right) - 10.0045\left(\frac{X}{C}\right)^2 + 16.8301\left(\frac{X}{C}\right)^3 - 10.6863\left(\frac{X}{C}\right)^4\right]$$

$$.5 \leqq \frac{X}{C} \leqq 1.0 \quad \left(\frac{Y}{C}\right)_L = \frac{t}{C}\left[2.20451\sqrt{\frac{X}{C}} - 7.33441\left(\frac{X}{C}\right) + 10.7399\left(\frac{X}{C}\right)^2 - 8.00033\left(\frac{X}{C}\right)^3 + 2.39031\left(\frac{X}{C}\right)^4\right]$$

4,142,838

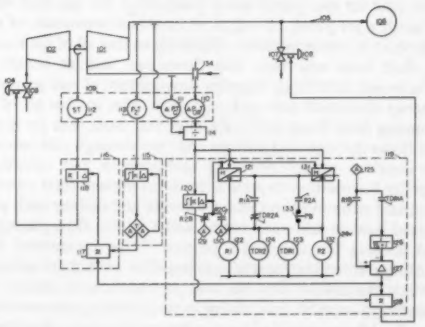
METHOD AND APPARATUS FOR PREVENTING SURGE IN A DYNAMIC COMPRESSOR

Naum Staroselsky, Des Moines, Iowa, assignor to Compressor Controls Corporation, Des Moines, Iowa

Filed Dec. 1, 1977, Ser. No. 856,302

Int. Cl.[2] F04B 49/00

U.S. Cl. 417—20 **5 Claims**



1. A method of antisurge protection for a dynamic compressor with a variable performance having a discharge port and an operating point within a safe operating zone limited by a surge control line, a pipeline connecting said discharge port to a user of a compressed gas, a control member including a fluid relief means capable of moving an operating point of the compressor

along its required operating line by changing its performance, a control system providing for the required operating line, a closed protective loop for preventing the operating point of the compressor from approaching a surge zone, said method comprising:

controlling a position of said fluid relief means by said closed protective loop after the operating point of the compressor, moving along its required operating line, crosses said surge control line in order to keep said operating point on the surge control line until there is a deviation of the operating point from the surge control line which reaches preestablished value;

adjustably opening said fluid relief means as quickly as possible after said deviation of the operating point from the surge control line reaches said preestablished value, and then exponentially closing said fluid relief means;

controlling the position of said fluid relief means by said closed protective loop after the operating point of the compressor crosses said surge control line again as a result of the exponential closing of said fluid relief means and changing the performance of the compressor in order to keep the operating point of the compressor on the surge control line with a minimum deviation; and

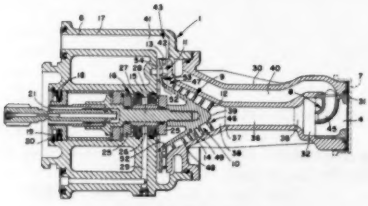
changing the location of said surge control line in a direction away from the surge limit line if surge begins.

4,142,839

CENTRIFUGAL PUMP FOR HIGH V/L PERFORMANCE

H. Dean Davis, Greenwich, and Desh K. Kapur, Elyria, both of Ohio, assignors to Lear Siegler, Inc., Elyria, Ohio

Filed Feb. 3, 1975, Ser. No. 546,338
Int. Cl.[2] F04B *23/04*
U.S. Cl. 417—89 **14 Claims**



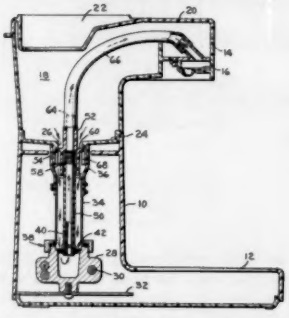
1. A centrifugal pump capable of pumping fluids having a high vapor to liquid ratio comprising a housing containing a main inlet for said pump and a main outlet for the fluid being pumped, a jet pump having a jet nozzle downstream of said main inlet in communication therewith so that all of the incoming fluid from said main inlet flows past said jet nozzle, an inducer and centrifugal impeller downstream of said jet nozzle in series therewith and with said main inlet so that all of the incoming fluid from said main inlet and from said jet nozzle first flows through said inducer and then through said centrifugal impeller, means mounting said inducer and centrifugal impeller for rotation to pressurize the combined fluid received from said main inlet and said jet nozzle and deliver such pressurized fluid to said main outlet, and a motive flow passage in said housing for directing a portion of the pressurized fluid discharge from said centrifugal impeller to said jet pump to provide the motive flow for said jet nozzle, said inducer and centrifugal impeller comprising inducer blades and centrifugal impeller blades provided on a common disc-hub combination mounted for rotation, said disc-hub combination having an outwardly tapered portion on which said inducer blades are helically wound, and a radial disc at the outermost end of said tapered portion having a front face on which said centrifugal impeller blades are provided, said disc-hub combination having holes in the region between said inducer blades and centrifugal impeller blades to permit fluid pressure to act on the back side of said disc-hub combination to reduce axial thrust caused by said blades during rotation.

4,142,840

COFFEEMAKER PUMP SYSTEM

Charles L. Kemp, Asheboro, N.C., assignor to General Electric Company, Bridgeport, Conn.

Filed Dec. 5, 1977, Ser. No. 857,210
Int. Cl.[2] F04B *19/24*
U.S. Cl. 417—209 **5 Claims**



1. A coffeemaker having an upright C-shaped housing, one horizontal leg having a heated carafe support and the other a water spreader, the vertical leg enclosing an accessible water reservoir having an apertured bottom wall, and a pump and heated chamber in the bottom of said housing for delivering heated water to the spreader, means for heating the water in said chamber a tubular outer conduit connecting said apertured wall and chamber, a concentric spaced inner conduit between said chamber and reservoir interior, an integral one-way valve means on the inner conduit between said conduits in said chamber permitting cold water into said chamber through said outer conduit and hot water exit through said inner conduit, an improvement in said pump and delivery means subassembly comprising,

insulating means surrounding said inner conduit its entire length,

a cylindrical retainer supported on the upper end of said inner conduit,

spring means between said retainer and insulating means and abutting both to telescopically bias said retainer,

said retainer including horizontal ears thereon,

matching slots in said bottom wall aperture, and

a manually removable and flexible elastomer tube connecting the spreader and upper inner conduit,

whereby the pump and delivery means may be removed as a subassembly by detaching said elastomer tube, depressing and rotating said retainer to align the ears and slots to unlock the retainer and lift out the entire subassembly for cleaning.

4,142,841

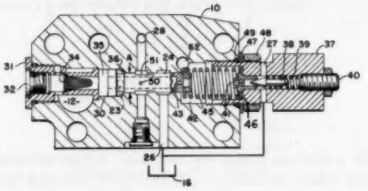
VARIABLE DISPLACEMENT PUMP CONTROL

Leslie M. Claar, Willowick, and Raymond E. Johnson, Newbury, both of Ohio, assignors to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Aug. 31, 1977, Ser. No. 829,216
Int. Cl.[2] F04B *49/00, 1/30*
U.S. Cl. 417—213 **24 Claims**

1. Control means for a variable displacement hydraulic pump of the type including a housing assembly having pump means, high and low fluid pressure zones, and a fluid pressure operated member operatively engaged with said pump means to vary the displacement thereof, said fluid pressure operated member having restricted fluid communication with said high

pressure zone; said control means comprising a valve member movable in said housing assembly to open and close a bleed passage from said fluid pressure operated member to said low pressure zone and having first opposed areas including an area on one side thereof exposed to fluid pressure in said high pressure zone and an area on the other side exposed to fluid pressure in said high pressure zone via orifice means; spring means in said housing assembly biasing said valve member to bleed passage closing position; and a pilot valve in said housing assembly opened upon increase of fluid pressure in said high pressure zone to predetermined magnitude to bleed fluid pressure acting on the area on said other side of said valve member to said low pressure zone whereby predominant fluid pressure



upstream of said orifice means acting on the area on said one side of said valve member is effective to move it to a position to open said bleed passage for movement of said fluid pressure operated member to decrease the capacity of said pump means; and another valve member movable in said housing assembly responsive to opening of said pilot valve and to abnormal increase in pressure drop across said orifice means to open a relief passage from said high pressure zone to said low pressure zone; said another valve member when in relief passage closing position having unequal opposed areas of which the smaller area is exposed to said high pressure zone and of which the larger area is exposed to said high pressure zone via said orifice means.

4,142,842

DUAL SOURCE HYDRAULIC STEERING SYSTEM

Leon E. Hicks; Wayne A. Peterson, and Lawrence F. Schexnayder, all of Joliet, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Continuation of Ser. No. 614,104, Sep. 17, 1975, abandoned, which is a division of Ser. No. 504,055, Sep. 9, 1974, Pat. No. 3,935,918. This application Feb. 23, 1977, Ser. No. 771,856

Int. Cl.[2] F04B *49/00*

U.S. Cl. 417—288 **4 Claims**

1. A dual-source, fluid supply system for a hydraulic circuit comprising:

a first source of fluid under pressure coupled with a first drive means which operates from a first energy source,

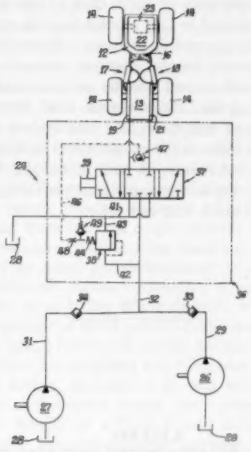
a second source of fluid under pressure coupled with a second separate and independent drive means which operates from a different second energy source that remains available if said first energy source fails,

a control valve for selectively actuating and deactuating said hydraulic circuit, said control valve having a fluid inlet and having outlet means communicated with said hydraulic circuit,

check valve means for simultaneously communicating both of said first and second sources with said inlet of said control valve, the check valve means assuring a continuous supply of fluid to said inlet of said control valve in the event of operating failure of one of said sources,

a fluid-responsive inlet relief valve means arranged in fluid communication between the sources and said fluid inlet of said control valve, the inlet relief valve means also being in communication with a fluid drain and having pilot means connected to said control valve outlet means and which is responsive to the output fluid pressure transmitted from said control valve to said hydraulic circuit in order to vary fluid communication between said fluid inlet and said drain to thereby modulate fluid pressure at said control valve inlet, wherein

said inlet relief valve means includes separate inlet relief valve means in communication with each source in order to regulate fluid communicated from each source to the



hydraulic circuit through the control valve said first and second fluid sources each being sized to continuously provide a substantial portion of the fluid flow requirements of said hydraulic circuits through said check valve means when said control valve is operated.

4,142,843

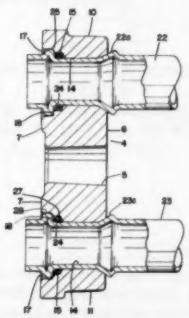
COMPRESSOR BLOCK AND TUBE ASSEMBLY

Arthur S. Kish, Lyndhurst, Ohio, assignor to Murray Corporation, Cockeysville, Md.

Filed Mar. 30, 1977, Ser. No. 782,767

Int. Cl.[2] F04B *39/12;* F16L *13/14*

U.S. Cl. 417—313 **2 Claims**



1. A compressor block and tube assembly comprising a compressor block having spaced cylindrical holes extending partially through said block, a first annular recess adjacent one end of each of said holes and of a diameter larger than that of said holes, whereby to provide a shoulder or abutment at the junction of said one end of said holes and said recess, a second annular recess ajacent said first annular recess and of a diameter larger than that of the first recess, whereby to provide a shoulder or abutment at the junction of said second annular recess and said first annular recess, a conical seat adjacent the other end of each of said holes, circumferentially spaced

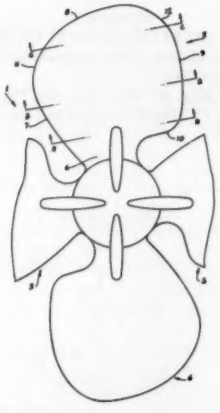
splines in the walls of said holes extending from substantially the midpoints thereof to said conical seats, a tube extending through each of said holes, with the portion of the tubes which extend through said holes being of substantially the same outside diameter as the inside diameter of said holes, so that said portions have a slip fit in said holes, said tubes having shoulders in abutment with said concial seats, each of said tubes having an annular bed disposed in said second annular recesses, each of said beads having an outside diameter substantially the same as that of said second annular recesses, whereby said beads substantially fill said second annular recesses, said bead and conical seat locking said tubes against axial movement relatively to the axes of said holes and said splines being interlocked with the exterior walls of said tubes locking said tubes against rotational movement in said holes, and O-rings disposed in said first annular recesses, and providing leak-proof seals between said block and said tubes.

4,142,844

FAN BLADE ASSEMBLIES FOR BOX FANS

Edward H. Brattstrom, Pascoe Vale, Australia, assignor to Allware Agencies Ltd., London, England

Filed May 31, 1977, Ser. No. 802,040
Int. Cl.[2] F01D *5/00*
U.S. Cl. 417—423 R **10 Claims**



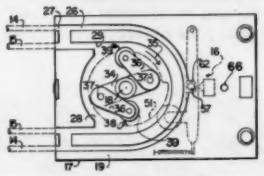
1. A box fan comprising a box-like structure having a front and rear opening interconnected to form a duct passing through said structure said duct containing an electric motor and a large axial depth wide-bladed fan blade assembly operable by the motor to rotate about an axis of rotation, which fan blade assembly is so located that the centre of gravity of said fan blade assembly is located near the rear opening, wherein the fan blade assembly has a plurality of blades each of which has a shape in a plane normal to the axis of rotation, which shape comprises a neck connecting the blade to a hub defining the centre of the assembly, a slightly convex leading edge extending from said neck, a convex outermost edge, a slightly convex trailing edge and a chin portion connecting the trailing edge to the neck, said trailing edge being heavily set near said chin portion and being decreasingly heavily set as the outermost edge is approached along said trailing edge.

4,142,845

DIALYSIS PUMP SYSTEM HAVING OVER-CENTER CAM TRACKS TO LOCK ROLLERS AGAINST TUBING

William A. Lepp, 322 Waterloo St., and Jules O. Legal, 89 Elm Park Rd., both of Winnipeg, Manitoba, Canada

Continuation-in-part of Ser. No. 659,759, Feb. 20, 1976, abandoned. This application Sep. 27, 1977, Ser. No. 836,960
Int. Cl.[2] F04B *43/08, 43/12, 45/06*
U.S. Cl. 417—477 **17 Claims**



1. In a dialysis pump for use with a conventional dialysis machine which includes a dialysed blood carrying flexible tube and an undialysed blood carrying flexible tube, a source of power, a shaft driven by said source of power, an upper plate, a dialysed blood carrying tube retaining channel formed in said upper plate and a curved undialysed blood carrying tube retaining wall also formed in said upper plate, a roller type pump assembly driven by said source of power and adapted to rotate against said undialysed blood carrying tube and collapse same against said wall, said pump including a pair of rollers journalled for rotation upon said drive shaft adjacent said wall to produce a pumping action within said undialysed blood carrying tube and an occluder assembly adapted to intermittently engage said dialysed blood carrying tube within its channel; the improvement comprising means to withdraw said rollers from said wall to facilitate engagement and disengagement of said undialysed blood carrying tube against said wall, said means including a rotor bar rotated by said source of power, means pivotally mounting said rollers adjacent the ends of said rotor bar in trailing relationship thereto, and manually operable means mounted upon the upper end of said drive shaft and cooperating with said rollers to retract same from said wall when rotated in one direction and to extend said rollers towards said wall when rotated in the other direction, said manually operated means including a member journalled for free rotation upon said drive shaft, means mounting said rollers for rotation and extending upwardly therefrom, an arcuately curved cam track channel for each of said last mentioned means, formed within the underside of said member and being slidably engageable by said means extending upwardly from said rollers, said cam track channels having inner and outer ends, rotation of said member in one direction when said pump is in the non-operating mode, moving said rollers to a retracted position relative to said wall and in the closest position to said drive shaft, rotation of said member in the opposite direction, moving said rollers to an extended position whereby said rollers are at the maximum distance from said drive shaft, and movement of said rollers further in said opposite direction to said outer ends of said channels, returning said rollers closer to said drive shaft, thereby detachably locking said rollers in the operating mode.

4,142,846

VALVE MEANS FOR USE IN A CONCRETE MATERIAL PUMP

Yoshiharu Yoshikawa, Gunma, Japan, assignor to Niigata Engineering Co., Ltd., Tokyo, Japan

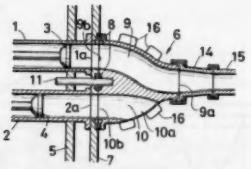
Filed Oct. 7, 1977, Ser. No. 840,445
Claims priority, application Japan, Oct. 8, 1976, 51/120429
Int. Cl.[2] F04B *15/02*
U.S. Cl. 417—517 **9 Claims**

1. A valve means for use in a concrete material pump having

stationary double cylinders and pistons for alternatively intaking and discharging the concrete material, respectively, comprising:

(a) a valve body provided in a hopper, said valve body having a substantial frusto-conical shape and being steppingly revolvable between a plurality of stationary positions,

(b) at least one concrete material intake passage formed in said valve body, and having one end opened at a frusto-conical surface of said valve body to form a first intake opening and having the other end opened at a bottom of said valve body to form a second intake opening, said second intake opening being selectively communicable with an open end of one of said cylinders at one of the stationary positions of said valve body, and



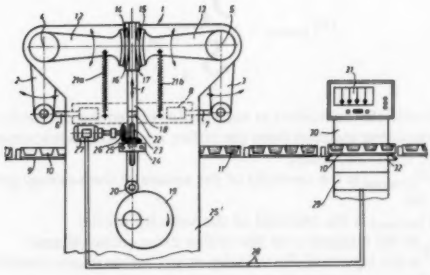
(c) a concrete material discharge passage formed in said valve body, and having one end opened at a top of said valve body to form a first discharge opening and having the other end opened at the bottom of said valve body to form a second discharge opening, said second discharge opening being selectively communicable with an open end of the other of said cylinders at said one stationary position of said valve body, whereby the concrete material contained in said hopper is intaken into said one of said cylinders through said intake passage with a retracting movement of one of said pistons, and the concrete material contained in the other of said cylinders is discharged into outside of said hopper through said discharge passage with extending movement of the other of said pistons.

4,142,847

MOLD FILLING APPARATUS WITH PRODUCT FEED CONTROL

Sergio Ripani, Milan, Italy, assignor to Carle & Montanari S.p.A., Milan, Italy

Filed Apr. 11, 1977, Ser. No. 786,662
Int. Cl.[2] A23G *1/20*; G01G *13/24*
U.S. Cl. 425—140 **2 Claims**



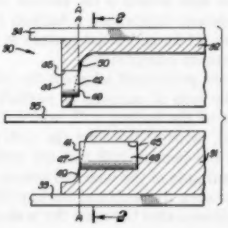
1. Apparatus for controlling the amount of a product introduced into the moulds of a forming machine for chocolate and the like, said machine comprising a pouring head, a pair of pistons cooperative with said pouring head for causing product to be supplied by said pouring head to moulds for filling thereof upon movement of said pistons, an actuator rod for actuation of said pistons and adapted for reciprocating movement, crank lever arms connected with said pistons and each reciprocable about a crank axis, further crank arms respectively connected to the first said crank arms, said further crank arms each carrying at one end a sector gear, said actuator rod having at one end a rack, each said sector gear meshing with said rack, a stop comprising a threaded rod for engagement by said actuator rod for limiting movement of said actuator rod in one direction thereby to limit the stroke of said piston, said forming machine comprising a cam, said actuator rod carrying at the opposite end a cam tracer, spring means urging said actuator rod toward said cam, rotation of said cam causing reciprocating movement of said actuator rod away from and toward said cam, said threaded rod limiting movement of said actuator rod toward said cam, a stepper motor, said threaded rod being adapted for being turned by said stepper motor for shifting the axial portion of said threaded rod, means carried by said actuator rod for engaging the end of said threaded rod, for varying the extent which movement of said actuator rod is limited by said threaded rod, empty moulds being supplied by conveyor upstream of said forming machine, and filled moulds to be carried by conveyor downstream of said forming machine, an electronic balance including a weighing table for weighing each mould after filling thereof, said electronic balance for weighing the filled moulds being downstream of said forming machine, a further electronic balance upstream of said forming machine for weighing empty moulds supplied thereto, and control means, responsive to said weighing table and connected to said stepper motor, for operating said stepper motor if the weight of a filled mould differs from a rated weight thereby automatically to increase or decrease the weight of filled moulds to said rated weight, said control means being responsive also to said further balance for controlling said stepper motor also as a function of the weight of said empty moulds, said electronic balances each having a programming means for predetermining a rated mould weight, and means for comparing an actual mould weight with said rated weight, the first said electronic balance being connected with said further electronic balance for transmitting the weight of the empty moulds to said further electronic balance, the first said balance including an electronic differential for subtracting the weight of an empty mould from that of a filled mould to determine the weighted amount of product in a filled mould, said control means of the first said balance allowing for the weight of an empty mould before comparing the weight of a filled mould with said rated weight.

4,142,848

APPARATUS FOR MANUFACTURING A LOCKABLE CARTON

Jere F. Irwin, 1702 S. 24th Ave., Yakima, Wash. 98902

Filed Jun. 30, 1977, Ser. No. 811,689
Int. Cl.[2] B29C *17/14*
U.S. Cl. 425—298 **5 Claims**



1. A forming tool for use in matched mold thermoforming of an open vessel with outwardly sloping side walls from a hot sheet of thermoplastic foam, and for simultaneous production of a hole in said side wall, comprising:

matched male and female molds defining respectively the internal and external surfaces of said vessel, said molds,

when at the position of maximum proximity, forming a molding cavity for formation of said vessel walls,

aperture-forming means rigidly fixed on said molds so as to extend into the molding cavity,

said means including a pair of shaped half plugs each having a substantially vertical end face, and each respectively associated with a said mold,

said half plugs disposed in a contiguous laterally extending relationship at the position of maximum proximity of the molds, so as to position said vertical end faces of the shaped half plugs in end to end abutment,

said vertical faces thereby penetrating said sheet as they slidably move into the position of abutment, thus initiating and expanding said hole by mutually displacing a quantity of hot foam equivalent to the volume of the wall molding cavity occupied by said plugs, and delivering the displaced foam to vessel wall areas surrounding said hold, thereby reinforcing said areas.

4,142,849

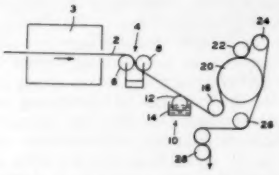
MULTILEVEL EMBOSSING OF FOAMED-SHEET MATERIALS — II

Walter J. Lewicki, Jr., Lancaster; William M. McQuate, Reinholds, and Richard M. Ringer, Lancaster, all of Pa., assignors to Armstrong Cork Company, Lancaster, Pa.

Division of Ser. No. 766,941, Feb. 9, 1977, Pat. No. 4,070,435. This application Aug. 10, 1977, Ser. No. 823,468

Int. Cl.[2] B29C *17/00*

U.S. Cl. 425—385 **3 Claims**



1. In an apparatus for embossing a web of material wherein the material is composed of a composite structure having at least a carrier and a thick foam layer, said foam layer on the surface thereof adjacent the surface to be embossed having a decorative pattern printed thereon, said above composite structure being in the form of a web which is heated in an oven to a temperature of about 250° F. to 350° F., said apparatus comprising:

(a) oven means heating the web of material,

(b) after the carrier, the web leaves the oven means, a means wetting the back surface, the non-embossable surface of the web of material, so as to lower the temperature of the back surface of the web approximately 100° below the top surface of the web, which is the surface to be embossed,

(c) embossing means comprising a backup roll and an embossing roll to set an embossed pattern in the web, and

(d) the improvement comprising:

(1) guide means positioned adjacent the backup roll so as to cause the web of material to partially wrap around the surface of the backup roll, which is a chilled steel backup roll, prior to the time the web passes between the nip of the backup roll and the embossing roll, to cool the back side of the web and secure good frictional contact between the web and backup roll so that good frictional drive exists between the web and the backup roll,

(2) a definition roll means positioned adjacent the embossing roll to cause the web of material to wrap around the embossing roll after it has passed through the nip between the embossing roll and the backup roll to partly cool the embossed surface of the web, and

(3) said wetting means which wets the carrier of the web being two back wetting means, one back wetting means wets the carrier of the web just as it leaves the oven, and the second back wetting means wets the carrier of the web just prior to the time the web is wrapped partially around the chilled steel backup roll.

4,142,850

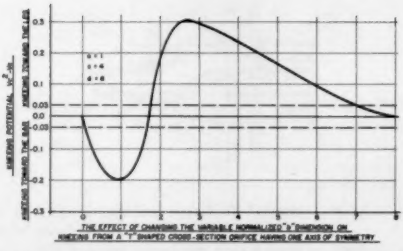
NON-KNEEING SPINNING ORIFICES FOR SPINNERETS

Bobby M. Phillips, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 2, 1975, Ser. No. 538,068

Int. Cl.[2] B29F *3/04*

U.S. Cl. 425—461 **10 Claims**



THE EFFECT OF CHANGING THE VARIABLE NORMALIZED "a" DIMENSION ON KNEEING FROM A "T" SHAPED CROSS-SECTION ORIFICE HAVING ONE AXIS OF SYMMETRY

1. A spinneret for extruding filament forming materials and having formed through the face of the spinneret one or more orifices of non-round cross-section,

each orifice being so dimensioned that the coordinates of the centroid of the square of the velocity profile of the extruding material in the plane perpendicular to the axis of the orifice, as determined by

$$(V^2)_{centroid} = \frac{\int_A V^2 \vec{r}\, dA}{\int_A V^2 dA}$$

and the coordinates of the centroid of the velocity profile of the extruding material in the plane perpendicular to the axis of the orifice, as determined by

$$(V)_{centroid} = \frac{\int_A V \vec{r}\, dA}{\int_A V\, dA}$$

are essentially coincident at each orifice exit so that the flow of the extruding material from the orifice has axisymmetric emergence behavior, where

$(V^2)_{centroid}$ is the centroid of the square of the velocity profile

$(V)_{centroid}$ is the centroid of the velocity profile

$\int_A$ is the integral over the orifice cross-sectional area

V^2 is the square of the velocity at any radius vector location $\vec{r}$

$\vec{r}$ is the radius vector from the origin of any set of orthogonal coordinate axes to any point r within the orifice cross-section

dA is the differential area element,

each orifice also being a T-cross-section having one axis of symmetry and wherein the width of the leg of the T-cross-section is designated 2a, the width of the bar of the T-cross-section

is designated b, the length of the bar of the T-cross-section is designated 2c, and the length of the leg of the T-cross-section is designated d-b, and with the normalized dimensions of each T-cross-sectioned orifice being as follows:

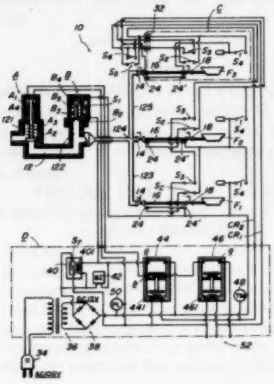
$a = 1$
$b = 2$
$c = 4$
$2 \leqq d \leqq 4\ 1/3$.

4,142,851

APPARATUS FOR PREVENTING GAS LEAKAGE

Rikiya Handa, 61-10, Bessho-machi Omiya-shi, Saitama-ken, Japan

Filed May 17, 1977, Ser. No. 797,856
Claims priority, application Japan, Dec. 30, 1976, 51-158924
Int. Cl.[2] F23N *5/24*
U.S. Cl. 431—16 **8 Claims**



1. An apparatus for preventing gas leakage from gas burning equipment, comprising:

a pipe means having one end connected securely to an outlet of a stationary gas supplying source pipe;

an electromagnetic valve means arranged in said pipe means for normally closing the gas passage in said pipe means and for opening the gas passage when an electrical signal is applied thereto;

a gas pressure detecting means mounted on said pipe means downstream of said electromagnetic valve means for detecting when the gas pressure in said pipe means is lower than a predetermined pressure;

a plurality of gas burning system, each of which is connected to the other end of said pipe means, each of said gas burning systems including a valve means for opening and closing the gas passage to said gas burning system, first and second switch means coupled to said valve means for closing said first and second switch means when said valve means is closed and opening said first and second switch means when said valve means is open, a flame detection means for detecting the presence of normal gas burning in said gas burning system and a third switch means coupled to said flame detection means for closing said third switch means when said flame detection means detects the presence of normal gas burning;

a first circuit means for connecting said first switch means of said gas burning systems in series;

a second circuit means for connecting said second and third switch means of each of said gas burning system in parallel with each other and for connecting said parallel connections of each of said gas burning system in series;

an alarm means for producing an alarm; and

an electrical control system connected to said electromagnetic valve means, said gas pressure detecting means, said first and second circuit means and said alarm means, for applying an electrical signal to said electromagnetic valve means to open said gas passage when said first circuit means is open and said second circuit means is closed, for actuating said alarm means when said second circuit means is open and for actuating said alarm means when said gas pressure detecting means detects a gass pressure less than said predetermined pressure.

4,142,852

METHOD FOR DYEING AND FINISHING TEXTILE MATERIAL

Manfred Schuierer, Zell, Fed. Rep. of Germany, assignor to Bruchner Apparatebau GmbH, Erbach, Odenwald, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 598,335, Jul. 23, 1975, abandoned. This application Nov. 7, 1977, Ser. No. 849,305

Claims priority, application Fed. Rep. of Germany, Jul. 24, 1974, 2436688

Int. Cl.[2] D06P *3/00, 5/00*

U.S. Cl. 8—1 XB 11 Claims

1. A method of dyeing and fixing textile material made from polyamide fibers comprising the steps of first heating said material to an elevated temperature of at least about 90° C. sufficient to relieve stresses in said fibers; cooling said material to substantially room temperature directly following said heating step; applying to said cooled material a dye at substantially room temperature; and fixing said dye substantially at room temperature.

4,142,853

PROCESS FOR IMPROVING CELLULOSE FIBER PROPERTIES AND FOR DYEING THE SAME

Yasuhiko Terada, Kashihara; Jun Yasuda, Osaka, and Masao Kuriyama, Itami, all of Japan, assignors to Shikibo Limited, Osaka, Japan

Filed Jun. 16, 1976, Ser. No. 696,709

Claims priority, application Japan, Jun. 17, 1975, 50-74097

Int. Cl.[2] D06M *13/20*

U.S. Cl. 8—120 11 Claims

1. A process for acylating non-saponified cellulose fiber which comprises the first step of impregnating cellulose fiber with an aromatic acyl halide, and the second step of immersing the impregnated fiber containing the aromatic acyl halide into an aqueous solution containing more than 10% by weight of alkali hydroxide whereby the cellulose fiber is acylated.

4,142,854

CONTINUOUS LIQUID PROCESSING OF CLOTH IN A HIGH PRESSURE STEAMER

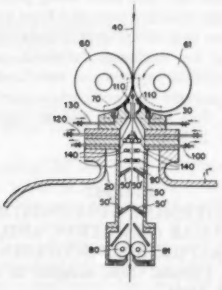
Yoshikazu Sando, and Hiroshi Ishidoshiro, both of Wakayama, Japan, assignors to Sando Iron Works, Co., Ltd., Wakayama, Japan

Filed Mar. 11, 1977, Ser. No. 776,911

Claims priority, application Japan, Mar. 18, 1976, 51-29526; Nov. 19, 1976, 51-139260

Int. Cl.[2] D06B *23/18*

U.S. Cl. 8—149.1 3 Claims



1. A method of continuously processing cloth with a liquid, such as a dyestuff, within a high pressure steamer vessel having a sealed inlet through which the cloth passes into the steamer vessel, comprising the steps of forming an enclosed spraying station within the steamer vessel adjacent the inlet, passing the cloth through the enclosed spraying station, controllably spraying the liquid onto the surface of the cloth only within the enclosed spraying station, removing the cloth from the spraying station and continuously conveying the cloth through the steamer vessel while exposing the cloth to high temperature and high humidity conditions for effecting the continuous treatment of the cloth by the spray liquid as it is conveyed through the steamer vessel, collecting the sprayed liquid within the enclosed spraying station after the spraying step and recirculating the collected liquid for further use in the spraying step, passing the cloth sprayed with the liquid through the steamer vessel along a zigzag path and periodically tensioning the cloth as it moves along the zigzag path, conveying the cloth through the spraying station and then through the steamer vessel while maintaining the cloth in the unpressed state, and dividing the enclosed spraying station into a plurality of serially arranged chambers and regulating the temperature within the chambers so that the temperature within the chambers is reduced in a stepwise manner to a level considerably below the temperature within the steamer vessel with the reduction in temperature taking place in the direction opposite to the direction of movement of the cloth through the chambers.

4,142,855

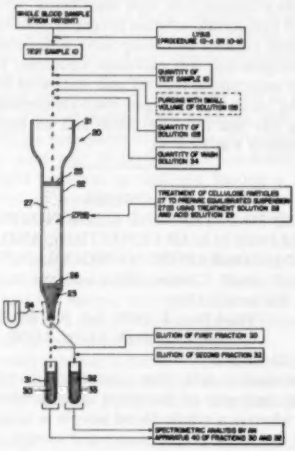
METHOD TO DETERMINE A DIAGNOSTIC INDICATOR OF BLOOD SUGAR CONDITION, AND, A LIQUID CHROMATOGRAPHIC MICROCOLUMN THEREFOR

Kenneth J. Acuff, Clinton, Ohio, assignor to Isolab, Incorporated, Barberton, Ohio

Filed Dec. 2, 1977, Ser. No. 856,722

Int. Cl.[2] G01N *33/16, 31/08*

U.S. Cl. 23—230 B 6 Claims



1. A method to determine a numerical percentage value as a diagnostic indicator of the blood sugar condition of a specific person, wherein a whole blood sample is taken from said person and thereafter prepared as a test sample containing a red blood cell hemolysate solution, and thereafter,

a quantity of said test sample is introduced into an end of a column bed of ion exchange cellulose particles, said column bed comprising a suspension of particles of microgranular ion exchange cellulose, modified by removal of the amorphous regions and stabilized by cross-linking, containing positively charged diethylaminoethyl groups and having a size less than 400 mesh and an equilibrated pH of substantially 8.5 at 22.5° C. which will absorb the blood components of said test sample, and then,

a quantity of a tris-cyanide solution is introduced into an end of said column bed to elute therefrom a fraction of said test sample and thereafter,

an aliquot quantity of a first eluate fraction is collected from the other end of said column bed, and then,

a quantity of wash solution is introduced into an end of said column bed to desorb substantially all the remaining blood components of said test sample from said cellulose particles, and thereafter,

an aliquot quantity of a second eluate fraction is collected from the other end of said column bed, and then,

the hemoglobin species present in each said eluate fraction are separately detected and measured by spectrometric analysis with the respective amounts thereof being expressed as an integer, and thereafter,

the amount of hemoglobin species in said second eluate fraction is compared to the sum of the amounts of hemoglobin species in each fraction, according to the mathematical formula —

$$\frac{\text{integer for second eluate fraction} \times 100}{\text{integer for first eluate fraction} + \text{integer for second eluate fraction}} =$$

a numerical percentage value,

said numerical percentage value being a diagnostic indicator of the blood sugar characteristics of said specific person.

5. A microcolumn for use in the determination of a numerical percentage value as a diagnostic indicator of the blood sugar condition of a person providing a whole blood sample: having a reservoir discharging into a barrel terminating in a discharge tip, the juncture between said reservoir and said barrel and the juncture between said barrel and said tip each being closed by a transverse disc, and ion exchange cellulose particles positioned in said barrel between said transverse discs to provide a column bed, said discs being permeable to a red blood cell hemolysate solution prepared from said whole blood sample; said column bed comprising a suspension of particles of a microgranular ion exchange cellulose, modified by removal of amorphous regions and stabilized by cross-linking, containing positively charged diethylaminoethyl groups and having a size less than 400 mesh and an equilibrated pH of substantially 8.5 at 22.5° C.

4,142,856

METHOD TO DETERMINE A DIAGNOSTIC INDICATOR OF BLOOD SUGAR CONDITION, AND, A LIQUID CHROMATOGRAPHIC MICROCOLUMN THEREFOR

Kenneth J. Acuff, Clinton, Ohio, assignor to Isolab, Incorporated, Barberton, Ohio

Filed Dec. 2, 1977, Ser. No. 856,723
Int. Cl.[2] G01N *33/16, 31/08*
U.S. Cl. 23—230 B **6 Claims**

1. A method to determine a numerical percentage value as a diagnostic indicator of the blood sugar condition of a specific person, wherein a whole blood sample is taken from said person and thereafter prepared as a test sample containing a red blood cell hemolysate solution, and thereafter,

a quantity of said test sample is introduced into an end of a column bed of ion exchange cellulose particles, said column bed comprising a suspension of particles of a microgranular ion exchange cellulose, modified by removal of the amorphous regions and stabilized by cross-linking, containing negatively charged carboxymethyl groups and having a size less than 400 mesh and an equilibrated pH of substantially 6.8 at 22.5° C. which will adsorb the blood components of said test sample, and then,

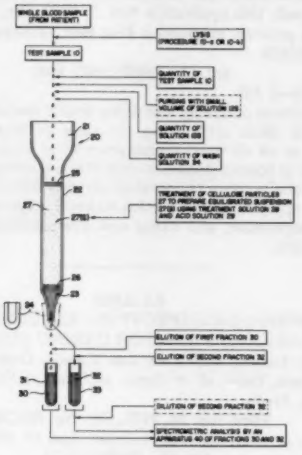
a quantity of a phosphate-cyanide solution is introduced into an end of said column bed to eluate therefrom a fraction of said test sample and thereafter,

an aliquot quantity of a first eluate fraction is collected from the other end of said column bed, and then,

a quantity of wash solution is introduced into an end of said column bed to desorb substantially all the remaining blood components of said test sample from said cellulose particles, and thereafter,

an aliquot quantity of a second eluate fraction is collected from the other end of said column bed, and then,

the hemoglobin species present in each said eluate fraction are separately detected and measured by spectrometric analysis with the respective amounts thereof being expressed as an integer, and thereafter,



the amount of hemoglobin species in said first eluate fraction is compared to the sum of the amounts of hemoglobin species in each fraction, according to the mathematical formula —

$$\frac{\text{integer for first eluate fraction} \times 100}{\text{integer for first eluate fraction} + \text{integer for second eluate fraction}} =$$

a numerical percentage value,

said numerical percentage value being a diagnostic indicator of the blood sugar characteristics of said specific person.

5. A microcolumn for use in the determination of a numerical percentage value as a diagnostic indicator of the blood sugar condition of a person providing a whole blood sample: having a reservoir discharging into a barrel terminating in a discharge tip, the juncture between said reservoir and said barrel and the juncture between said barrel and said tip each being closed by a transverse disc, and ion exchange cellulose particles positioned in said barrel between said transverse discs to provide a column bed, said discs being permeable to a red blood cell hemolysate solution prepared from said whole blood sample; said column bed comprising a suspension of particles of a microgranular ion exchange cellulose, modified by removal of the amorphous regions and stabilized by cross-linking, containing negatively charged carboxymethyl groups and having a size less than 400 mesh and an equilibrated pH of substantially 6.8 at 22.5° C.

4,142,857

METHOD TO DETERMINE A DIAGNOSTIC INDICATOR OF BLOOD SUGAR CONDITION, AND, A LIQUID CHROMATOGRAPHIC MICROCOLUMN THEREFOR

Kenneth J. Acuff, Clinton, Ohio, assignor to Isolab, Incorporated, Barberton, Ohio

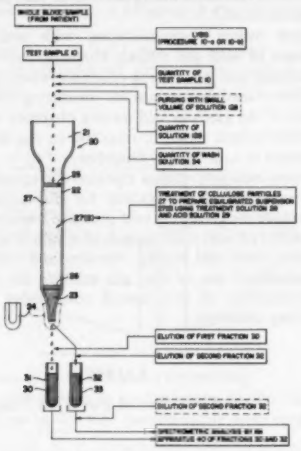
Filed Dec. 2, 1977, Ser. No. 856,724
Int. Cl.[2] G01N *33/16, 31/08*
U.S. Cl. 23—230 B **6 Claims**

1. A method to determine a numerical percentage value as a diagnostic indicator of the blood sugar condition of a specific person, wherein a whole blood sample is taken from said person and thereafter prepared as a test sample containing a red blood cell hemolysate solution, and thereafter,

a quantity of said test sample is introduced into an end of a column bed of ion exchange cellulose particles, said column bed comprising a suspension of particles of a microgranular ion exchange cellulose, modified by removal of the amorphous regions and stabilized by cross-linking, containing negatively charged carboxymethyl groups and having a size less than 400 mesh and an equilibrated pH of substantially 6.1 at 22.5° C. which will adsorb the blood components of said test sample, and then,

a quantity of a bis-tris-cyanide solution is introduced into an end of said column bed to elute therefrom a fraction of said test sample and thereafter,

an aliquot quantity of a first eluate fraction is collected from the other end of said column bed, and then,



a quantity of wash solution is introduced into an end of said column bed to desorb substantially all the remaining blood components of said test sample from said cellulose particles, and thereafter,

an aliquot quantity of a second eluate fraction is collected from the other end of said column bed, and then,

the hemoglobin species present in each said eluate fraction are separately detected and measured by spectrometric analysis with the respective amounts thereof being expressed as an integer, and thereafter,

the amount of hemoglobin species in said first eluate fraction is compared to the sum of the amounts of hemoglobin species in each fraction, according to the mathematical formula —

$$\frac{\text{integer for first eluate fraction} \times 100}{\text{integer for first eluate fraction} + \text{integer for second eluate fraction}} = \text{a numerical percentage value,}$$

said numerical percentage value being a diagnostic indicator of the blood sugar characteristics of said specific person.

5. A microcolumn for use in the determination of a numerical percentage value as a diagnostic indicator of the blood sugar condition of a person providing a whole blood sample: having a reservoir discharging into a barrel terminating in a discharge tip, the juncture between said reservoir and said barrel and the juncture between said barrel and said tip each being closed by a transverse disc, and ion exchange cellulose particles positioned in said barrel between said transverse discs to provide a column bed, said discs being permeable to a red blood cell hemolysate solution prepared from said whole blood sample; said column bed comprising a suspension of particles of a microgranular ion exchange cellulose, modified by removal of the amorphous regions and stabilized by cross-linking, containing negatively charged carboxymethyl groups and having a size less than 400 mesh and an equilibrated pH of substantially 6.1 at 22.5° C.

4,142,858

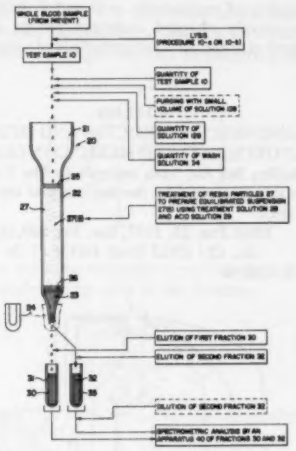
METHOD TO DETERMINE A DIAGNOSTIC INDICATOR OF BLOOD SUGAR CONDITION, AND, A LIQUID CHROMATOGRAPHIC MICROCOLUMN THEREFOR

Kenneth J. Acuff, Clinton, Ohio, assignor to Isolab, Incorporated, Barberton, Ohio

Filed Dec. 2, 1977, Ser. No. 856,725

Int. Cl.[2] G01N *33/16, 31/08*

U.S. Cl. 23—230 B **6 Claims**



1. A method to determine a numerical percentage value as a diagnostic indicator of the blood sugar condition of a specific person, wherein a whole blood sample is taken from said person and thereafter prepared as a test sample containing a red blood cell hemolysate solution, and thereafter,

a quantity of said test sample is introduced into an end of a column bed of ion exchange resin particles, said column bed comprising a suspension of particles of a copolymer of methacrylic acid and divinylbenzene containing negatively charged carboxyl groups and having a 200–400 mesh size and an equilibrated pH of substantially 6.8 at 22.5° C. which will adsorb the blood components of said test sample, and then,

a quantity of a bis-tris-cyanide-chloride solution is introduced into an end of said column red to elute therefrom a fraction of said test sample and thereafter,

an aliquot quantity of a first eluate fraction is collected from the other end of said column bed, and then,

a quantity of wash solution is introduced into an end of said column bed to desorb substantially all the remaining blood components of said test sample from said resin particles, and thereafter,

an aliquot quantity of a second eluate fraction is collected from the other end of said column bed, and then,

the hemoglobin species present in each said eluate fraction are separately detected and measured by spectrometric analysis with the respective amounts thereof being expressed as an integer, and thereafter,

the amount of hemoglobin species in said first eluate fraction is compared to the sum of the amounts of hemoglobin species in each fraction, according to the mathematical formula —

$$\frac{\text{integer for first eluate fraction} \times 100}{\text{integer for first eluate fraction} + \text{integer for second eluate fraction}} = \text{a numerical percentage value,}$$

said numerical percentage value being a diagnostic indicator of the blood sugar characteristics of said specific person.

5. A microcolumn for use in the determination of a numerical percentage value as a diagnostic indicator of the blood

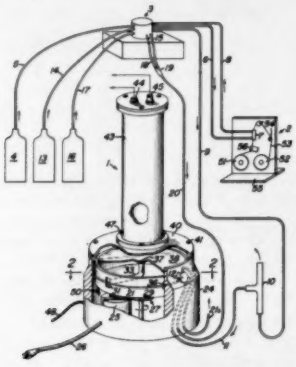
sugar condition of a person providing a whole blood sample: having a reservoir discharging into a barrel terminating in a discharge tip, the juncture between said reservoir and said barrel and the juncture between said barrel and said tip each being closed by a transverse disc, and ion exchange resin particles positioned in said barrel between said transverse discs to provide a column bed, said discs being permeable to a red blood cell hemolysate solution prepared from said whole blood sample; said column bed comprising a suspension of particles of a copolymer of methacrylic acid and divinylbenzene containing negatively charged carboxyl groups and having a 200–400 mesh size and an equilibrated pH of substantially 6.8 at 22.5° C.

4,142,859

CHEMILUMINESCENT PROCESS AND DETECTOR FOR MONITORING ATMOSPHERIC CONTAMINANTS

Roy E. Shaffer, Bel Air, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 23, 1977, Ser. No. 809,353
Int. Cl.[2] G01J *3/46;* **G01N** *21/26*
U.S. Cl. 23—232 R **11 Claims**



8. A process of monitoring contaminants in the atmosphere comprising the steps of:

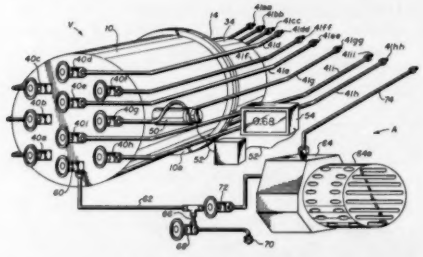
disposing a sample of the atmosphere in a water carrier and mixing it with luminous type reactants, measuring and graphing the luminous reactions for a time frame; and comparing the graph shape with known samples to ascertain the makeup of said sample.

4,142,860

APPARATUS FOR PRODUCING A CALIBRATION SAMPLE FOR ANALYTICAL INSTRUMENTATION

Donald P. Mayeaux, Rte. 3, Box 2914, Prairieville, La. 70769

Filed Jun. 23, 1976, Ser. No. 698,883
Int. Cl.[2] B01F *13/08;* **C09K** *3/00;* **G01C** *25/00;* **G01N** *31/00*
U.S. Cl. 137—557 **9 Claims**



1. Apparatus for producing a calibration gas mixture of known composition from a plurality of component gases separately introduced therein and blended together for use with analytical instrumentation, including:

a pressure vessel forming a gas mixing chamber of mass large relative to the mass of the gaseous contents introduced therein to provide a sufficient heat sink to hold the gas temperature substantially stable during the blending of the gases;

a stirring element movably disposed in said gas mixing chamber for homogenizing the mixture of gases introduced into, and retained within, said chamber while the gases are homogenized;

exhaust valve means operatively communicated with said chamber for controlling flow from said gas mixing chamber;

vacuum means communicating with said exhaust valve means of said gas mixing chamber for substantially exhausting said gas mixing chamber when desired;

pressure transducer means for measuring the absolute pressure of the gases in said mixing chamber and producing a usable output signal in response to the absolute pressure present in said mixing chamber;

pressure indicator means operatively connected with said pressure transducer means for displaying the absolute pressure measured by said pressure transducer means; and

a plurality of inlet valves, each of which is in fluid communication with said mixing chamber and with a supply of a component gas of the gas mixture for controlling the introduction of the desired component gases into said mixing chamber.

4,142,861

Patent Not Issued For This Number

4,142,862

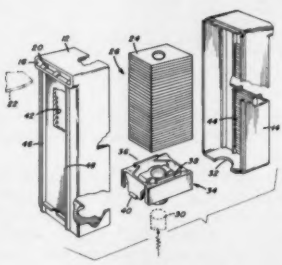
Patent Not Issued For This Number

4,142,863

ARTICLE CONTAINER FOR DISPENSING REAGENT SLIDES

Roger G. Covington, and Stephen H. Miller, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 5, 1978, Ser. No. 912,288
Int. Cl.[2] G01N *1/28;* **B65D** *83/10*
U.S. Cl. 422—63 **10 Claims**



1. A container for dispensing reagent slides into apparatus (1) having a nest into which said containers are insertable and (2) adapted to use reagent slides to carry out quantitative chemical analysis of fluid samples; said container comprising:

a plurality of separate casing parts adapted to be joined together to form a generally rectangular housing having (1) a dispensing station for dispensing slides to the apparatus when the container is properly oriented in the nest and (2) a chamber for receiving a stack of the slides to be

dispensed into the apparatus through said dispensing station; and

discontinuity means, on at least one of said casing parts, for inhibiting insertion of said container into the nest in all orientations other than the proper orientation, whereby said dispensing station is aligned for injecting slides into the apparatus.

4,142,864

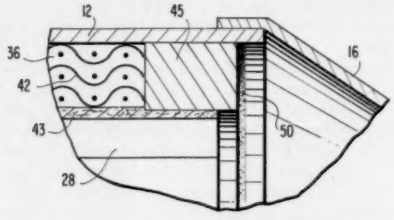
CATALYTIC APPARATUS

Victor Rosynsky, Elizabeth, N.J., and Alfred Stawsky, Bronx, N.Y., assignors to Engelhard Minerals & Chemicals Corporation, Iselin, N.J.

Filed May 31, 1977, Ser. No. 802,167

Int. Cl.[2] B01J *8/02, 35/04;* F01N *3/15*

U.S. Cl. 422—179 **20 Claims**



1. An apparatus for treating gases comprising:

a. a metallic casing defining an enclosure and having a gas inlet and a gas outlet that communicate with said enclosure;

b. a catalytic element of lesser dimension than said enclosure and positioned in the casing in a manner providing a space extending around the catalytic element between the catalytic element and the inner surface of the casing, said catalytic element comprising a unitary skeletal ceramic structure having gas flow passages therethrough;

c. a resilient, flexible member snugly holding said catalytic element and positioned under compression radially between the catalytic element and the inner surface of the casing, said resilient member being compressible longitudinally with respect to said catalytic element; and

d. at least one plug member at least partially within said space between the inner surface of the casing and the periphery of the catalytic element, said plug member being positioned within said space to longitudinally compress said compressed resilient flexible member to provide a quantity of solid material per unit volume of said space occupied by said resilient member which is at least about 20% greater relative to said quantity before said longitudinal compression, and sufficiently to hold said catalytic element against axial movement during its use.

4,142,865

LOW POUR HYDROCARBON OIL COMPOSITIONS

Willy P. Broeckx, Reet, Belgium, and Lothar G. Dulog, Oberjettingen, Fed. Rep. of Germany, assignors to S.A. Texaco Belgium N.V., Belgium

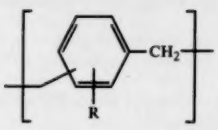
Filed Oct. 14, 1977, Ser. No. 842,447

Int. Cl.[2] C10L *1/18*

U.S. Cl. 44—62 **10 Claims**

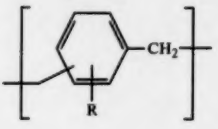
1. A hydrocarbon oil composition comprising a hydrocarbon oil and an effective pour depressant amount of an oil-soluble material selected from the group consisting of:

(A) a polymer comprising recurring units of the formula:

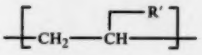


where R is alkyl of from 8 to 26 carbon atoms; and

(B) a copolymer comprising in random arrangement about 30 to about 90 weight percent of recurring units of the formula:



wherein R has the same meaning as previously described and with the remainder being units of the formula:



wherein R' is selected from the group consisting of phenyl and straight chain alkyl of from 4 to about 18 carbon atoms.

4,142,866

AMINE SALTS OF THIO-BIS-LACTONE ACIDS IN COMBINATION WITH COADDITIVE HYDROCARBONS ARE FLOW IMPROVERS FOR MIDDLE DISTILLATE FUEL OILS

Stanley J. Brois, Westfield; Antonio Gutierrez, Mercerville, and Nicholas Feldman, Woodbridge, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Feb. 6, 1978, Ser. No. 875,239

Int. Cl.[2] C10L *1/24*

U.S. Cl. 44—63 **7 Claims**

1. A fuel composition comprising a major proportion of a distillate petroleum fraction having an atmospheric boiling range of from about 120° C. to about 400° C. and from about 0.01 to 1.0 wt.% of a flow and filterability improving combination comprising: (a) 1 to 5 parts by weight of a secondary amine salt of thio-bis-(C_{12} to C_{50} alkyl lactone carboxylic acid); and (b) 1 to 100 parts by weight of a coadditive hydrocarbon of the class consisting of an oil-soluble amorphous hydrocarbon having less than about 5 wt.% of normal paraffin hydrocarbons, a hydrogenated polybutadiene having a number average molecular weight ranging from 400 to 10,000 and mixtures thereof.

4,142,867

APPARATUS FOR THE PRODUCTION OF COMBUSTIBLE GAS

Karl Kiener, 7081 Goldshofe, Ostalbkreis, Fed. Rep. of Germany

Division of Ser. No. 590,715, Jun. 26, 1975, Pat. No. 4,028,068. This application Sep. 27, 1976, Ser. No. 727,053

Claims priority, application Fed. Rep. of Germany, Jul. 4, 1974, 2432504

Int. Cl.[2] C10J *3/20*

U.S. Cl. 48—76 **10 Claims**

1. Apparatus for the production of combustible gas from waste materials and other combustible materials which comprises:

at least one low-temperature carbonization reactor comprising

a thermally insulated rotary tube,

means to rotate said rotary tube,

a covered aperture on said rotary tube for introduction of waste materials charge and for discharge of carbonized solids,

inlet means for introduction of gas into said rotary tube, and

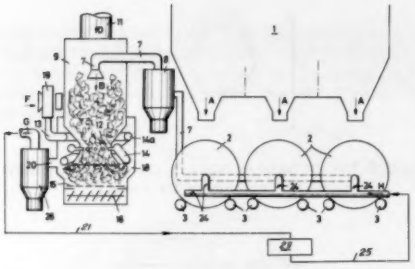
outlet means for low-temperature carbonization gases formed in said carbonization reactor;

means to receive carbonized solids discharged from said carbonization reactor;

a gasification reactor comprising

a reactor bed,

pipes that lead laterally into said reactor bed to supply preheated air thereto,



inlet means for introducing low-temperature carbonization gases obtained from said carbonization reactor,

outlet means at the bottom of said reaction bed for removing combustible gas formed in said gasification reactor, and

a grate for discharge of ash formed in said reaction bed;

a conveyor beneath said grate to handle ash discharged through said grate; and

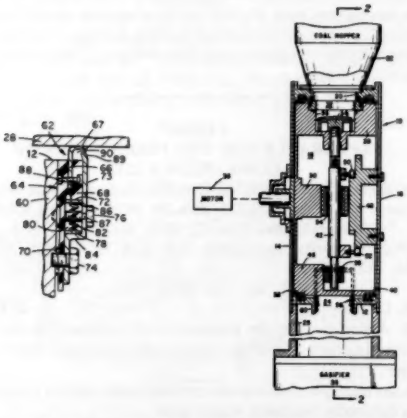
conduit means connecting said carbonization reactor outlet means to said gasification reactor inlet means for flow of said carbonization gases therethrough.

4,142,868

WEAR COMPENSATING SEAL MEANS FOR ROTARY PISTON COAL FEEDER

Hasan T. Gencsoy, and John F. Gardner, both of Morgantown, W. Va., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 2, 1978, Ser. No. 902,181
Int. Cl.[2] C10J *3/30, 3/50*
U.S. Cl. 48—86 R **4 Claims**



1. A seal arrangement in a coal transfer device used for transferring pulverized coal from a coal hopper to an underlying coal gasifier operable at a substantially higher pressure than that within said hopper, said transfer device comprising a hollow casing having an annulus with diametrically opposed openings therein with the first opening being in communication with said hopper and with the second opening being in registry with the gasifier, a disoidal rotor disposed and rotatable within said casing at a location radially inwardly spaced from said annulus and having a cavity therein defining a cylinder in open registry with the periphery of the rotor, a piston disposed in said cylinder, a piston rod attached to said piston and projecting diametrically through the rotational axis of said rotor, contoured stationary cam means carried by said casing, cam follower means affixed to said piston rod and engaging said cam means, and drive means coupled to said rotor for rotating said rotor about said axis while simultaneously driving said cam follower means along the contour of said cam means for reciprocating said piston within said cylinder, said contour cam means being of a configuration wherein the piston is displaced towards and maintained at a location contiguous to the outermost periphery of said rotor while the cylinder is in open communication with said gasifier for inhibiting gas therefrom from entering said cylinder, said seal arrangement comprising a primary seal and a secondary seal disposed in the second of said openings for inhibiting the passage of gases and particulate matter from said gasifier into the space between the casing annulus and the rotor, said primary seal having a lipped portion thereof disposed in an abutting relationship with the periphery of said rotor, said secondary seal supporting a main body portion of the primary seal in a vertically displaceable manner, bias means bearing against the secondary seal for displacing the primary seal to maintain the lipped portion thereof in said abutting relationship with the periphery of said rotor during rotation of the rotor about said axis, and further means acting upon said lipped portion for augmenting said bias means in urging said lipped portion of the primary seal against said rotor.

4,142,869

COMPACT-GRAINED DIAMOND MATERIAL

Leonid F. Vereschagin, Kutuzovsky prospekt, 2/1, kv. 231; Aik A. Semerchan, Kutuzovsky prospekt, 2/1, kv. 205, both of Moscow; Tamara T. Gankevich, Podolsky raion, Akademgorodok, ulitsa Shkolnaya, 6, kv. 16, Moskovskaya oblast; Mikhail E. Dmitriev, Podolsky raion, Akademgorodok, ulitsa Shkolnaya, 4, kv. 64, Moskovskaya oblast, and Vitaly P. Modenov, Podolsky raion, Akademgorodok, ulitsa Tsentralnaya, 10, kv. 42, Moskovskaya oblast, all of U.S.S.R.

Continuation of Ser. No. 534,155, Dec. 18, 1974, abandoned.
This application Mar. 22, 1977, Ser. No. 780,189
Claims priority, application U.S.S.R., Dec. 29, 1973, 1980906
Int. Cl.[2] B24D *3/06;* B05D *7/00*
U.S. Cl. 51—295 **7 Claims**

1. Method of producing a diamond based compact abrasive material consisting essentially of diamond particles all of which are coated with a titanium carbide or zirconium carbide film, which film forms an uninterrupted cellular structure throughout the entire volume of the diamond particles, the thus carbide-coated diamond particles being bound into a compact mass by substantially stoichiometric copper-titanium or copper-zirconium intermetallides filling the spacing between said carbide-coated diamond particles, which comprises subjecting diamond particles and a compact body of said intermetallide in a container to a temperature of 1000°–1200° C and a pressure of 10–30 kilobars to melt said intermetallide, whereby the intermetallide impregnates the diamond particles and is simultaneously saturated with the diamond carbon forming a film of the corresponding titanium or zirconium carbide on the diamond, and gradually reducing the temperature and pressure, thus obtaining said diamond based compact abrasive material.

4,142,870

ABRASIVE ARTICLES PREPARED FROM CROSSLINKED AROMATIC POLYIMIDES

Elwyn R. Lovejoy, Hockessin, Del., assignor to Abrasives International N.V., Curaco, Netherlands Antilles

Continuation-in-part of Ser. No. 702,356, Jul. 1, 1976, Pat. No. 4,107,125. This application Aug. 15, 1977, Ser. No. 824,731

Int. Cl.[2] E02D *27/42;* C08L *77/00*

U.S. Cl. 51—298 3 Claims

1. In an abrasive article of a matrix and filler particles including abrasive particles substantially homogeneously distributed throughout the matrix, the improvement wherein the matrix is a crosslinked aromatic polyimide polymeric material comprising a crosslinked chemical combination of (a) a higher molecular weight base resin of linear aromatic polyimide polymer having at least one ketonic carbonyl per repeat unit and a molecular weight of from 3,000 to 300,000 and (b) a lower molecular weight crosslinker resin of linear aromatic polyimide polymer having amine end-groups and a molecular weight of from 500 to 15,000; wherein the mole ratio of crosslinker resin to base resin is in the range of greater than 2 to 40 and wherein the molecular weight ratio of higher molecular weight resin to lower molecular weight resin is from 2 to 50.

4,142,871

PREPARATION OF ABRASIVE MATERIAL FROM SPENT CATALYSTS

Hans Zeiringer, Kappel, Krappfeld, Austria, assignor to Treibacher Chemische Werke Aktiengesellschaft, Treibach, Austria

Filed Oct. 25, 1977, Ser. No. 845,387

Claims priority, application Austria, Oct. 25, 1976, 7942/76

Int. Cl.[2] C04B *31/16;* B24D *3/04*

U.S. Cl. 51—308 9 Claims

1. A process for preparing an alumina abrasive material from a starting material comprised of a spent heavy metal alloy catalyst on an alumina carrier, comprising the steps of melting the starting material with at least one reducing agent to obtain a melt consisting of a melt component including the alumina on a residue of the alloy, cooling the melt at a speed correlated with a desired crystallite size of the abrasive material to be obtained, and mechanically separating the alumina-containing melt component from the alloy residue, the melt component constituting the abrasive material.

4,142,872

METAL BONDED ABRASIVE TOOLS

Victor R. Conradi, 12 Totius Ave., Ridgeway, Johannesburg, Transvaal, South Africa

Filed Jan. 9, 1978, Ser. No. 867,961

Claims priority, application South Africa, Jan. 26, 1977, 77/0465

Int. Cl.[2] B24D *3/06*

U.S. Cl. 51—309 8 Claims

1. A metal bonded abrasive body comprising diamond or cubic boron nitride abrasive particles, present in an amount of 5 to 15 percent by volume of the body, held in a metal bonding matrix, the metal bonding matrix consisting of cobalt, present in an amount of at least 50 percent by weight of the matrix, and boron in the form of cobalt borides substantially uniformly distributed through the matrix.

4,142,873

METHOD AND APPARATUS FOR CLEANING A FILTER BED

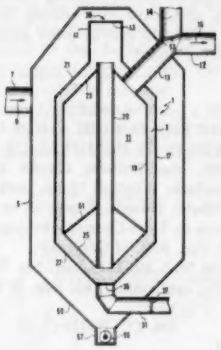
Wolfgang Berz, Westmount, Canada, assignor to Gimag Aktiengesellschaft, Chur, Switzerland

Filed May 3, 1977, Ser. No. 793,418

Claims priority, application Switzerland, May 6, 1976, 5706/76

Int. Cl.[2] B03C *3/80*

U.S. Cl. 55—12 3 Claims



1. A method of purifying a gas of solid suspended particles which comprises:

(a) passing the gas to be purified sequentially through a first vertically extending wall substantially permeable to said particles, and through a filter bed of granular material less permeable to said particles than said first wall and retaining said particles, whereby said gas is purified, and passing the purified gas through a second, vertically extending wall during each of a plurality of filtration phases,

(1) said walls and said filter bed being permeable to said gas, and

(2) said granular material being confined in a space bounded by said walls, said space having top and bottom portions;

(b) withdrawing the purified gas from said second wall during each filtration phase;

(c) withdrawing the granular material from said bottom portion during each of a plurality of filter bed cleaning phases alternating with said filtration phases by suspending the granular material in a stream of conveying gaseous material flowing toward a zone above said top portion during each cleaning phase;

(d) separating the suspended granular material in said zone from said stream during each cleaning phase;

(e) withdrawing said gaseous conveying material from said zone separately from said granular material while permitting said granular material to move downward into said top portion during each cleaning phase; and

(f) passing scavenging gas sequentially through said second wall, said filter bed, and said first wall during each cleaning phase.

4,142,874

SEPARATING GASEOUS NITROGEN OXIDES FROM OTHER GASES BY PARAMAGNETIC SEPARATION IN A LIQUID MEDIA

Vesper A. Vaseen, 9840 W. 35th Ave., Wheatridge, Colo. 80033

Filed Mar. 27, 1978, Ser. No. 890,822

Int. Cl.[2] B01D *19/00*

U.S. Cl. 55—48 6 Claims

1. An improvement in the art and science of recovering and concentrating; thus removing nitrogen oxides from a mixture of otherwise nonparamagnetic gases; comprising the steps of,

the absorbing or dissolving the paramagnetic nitrogen oxides gases in, either a polyorganosiloxane or halogenated hydrocarbon liquid, preferably under superatmospheric pressure, then passing the absorber liquid, pregnant with paramagnetic nitrogen oxides gases, between the poles of a high intensity magnet, and its magnetic field, which by the paramagnetic qualities of the nitrogen oxides molecules, causes the nitrogen gases to collect at the north and south poles of the magnet, thus supersaturating the liquid absorber near the poles, forming bubbles of nitrogen oxides, gases, and, then effervescing from the absorbing liquid, for collection and/or other processing; with recycle of absorber liquid.

4,142,875
PROCESS FOR THE PURIFICATION OF SCRUBBING SOLVENTS BY REMOVAL OF NI(CO)$_4$

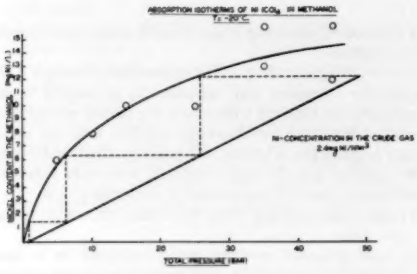
Gerd Bohmholdt, Marl-Polsum; Günter Deininger, Wulfen; Hans-Otto Gerlach; Winfried Hahn, both of Gelsenkirchen-Buer, and Wilhelm Hüwels, Essen, all of Fed. Rep. of Germany, assignors to Veba-Chemie Aktiengesellschaft, Gelsenkirchen-Buer, Fed. Rep. of Germany

Filed Mar. 10, 1977, Ser. No. 776,322

Claims priority, application Fed. Rep. of Germany, Mar. 16, 1976, 2610982

Int. Cl.^{2} B01D *19/00*

U.S. Cl. 55—72 **10 Claims**


ABSORPTION ISOTHERMS OF NI (CO)4 IN METHANOL
T = -50°C
NICKEL CONTENT IN THE METHANOL - mg Ni/l
Ni-CONCENTRATION IN THE CRUDE GAS
2.4mg Ni/Nm³
TOTAL PRESSURE (BAR)

1. A process for the purification of pressurized gases containing Ni(CO)$_4$ which comprises contacting said Ni(CO)$_4$ containing gases with a solvent at a temperature from −60° to 0° C. and thereafter precipitating nickel from the solution by heating the resultant solution at a temperature of from 70° to 250° C. for at least 0.25 hour at a pressure higher than the vapor pressure of the scrubbing liquid and removing the precipitate.

4,142,876
RECOVERY OF NATURAL GAS LIQUIDS BY PARTIAL CONDENSATION

Carl W. Zahn, Stavanger, Norway, and Hadwen A. Clayton, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 579,993, May 22, 1975, Pat. No. 4,040,259, which is a division of Ser. No. 315,535, Dec. 15, 1972, Pat. No. 3,901,673. This application Apr. 29, 1977, Ser. No. 792,365

Int. Cl.^{2} F25J *3/00*

U.S. Cl. 62—37 **4 Claims**

1. An apparatus for controlling the minimum temperature of an inlet feed stream to a separator in a system for the recovery of natural gas liquid by partial condensation of said inlet feed stream, said apparatus comprising:

(1) means for partially condensing an inlet feed stream material;

(2) connected to said condensation means a means for allowing the separating of partially condensed inlet feed stream material into a vapor outlet stream and a liquid outlet stream;

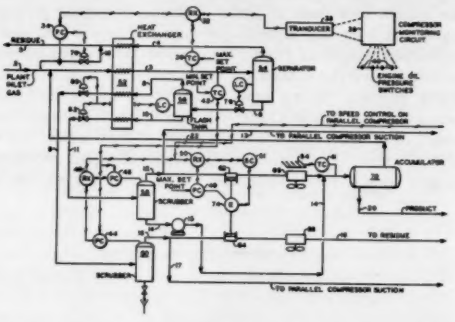
(3) means for passing the vapor outlet from said separating means in heat exchange with said inlet feed stream material;

(4) means for flashing the heat exchanged liquid outlet from said separating means;

(5) means for separately passing vapor outlet from said flashing means and liquid outlet from said flashing means in heat exchange with said inlet feed stream material;

(6) means for separately passing both the heat exchange vapor and liquid from the flashing means to separate pressure controlled scrubbing means;

(7) means for controlling the pressure in said scrubbing means by drawing vapor from the scrubbing means to the suction of a compression means;



(8) means for sensing the temperature of inlet flow to the separating means and producing a signal in response to said temperature;

(9) means for transmitting said signal as set point for the means of controlling the pressure of each of the scrubbing means;

(10) means for producing a signal in response to the pressure of each of the scrubbing means; and

(11) a first means for selecting the signal produced in response to the higher pressure of said scrubbing means and transmitting this signal to a separate controller as set point for drive of said compression means.

4,142,877
METHOD FOR MAKING OUTPUT/INPUT COUPLER FOR MULTI-MODE GLASS FIBERS

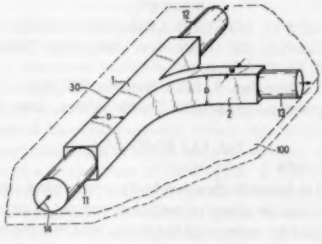
Franz Auracher, Munich, and Ralf Kersten, Rottach-Egern, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Division of Ser. No. 774,663, Mar. 4, 1977, Pat. No. 4,089,583. This application Mar. 22, 1978, Ser. No. 888,941

Claims priority, application Fed. Rep. of Germany, Mar. 5, 1976, 2609143

Int. Cl.^{2} C03B *37/00*

U.S. Cl. 65—4 B **4 Claims**



1. A method for producing a coupler for use with a multimode glass fiber to couple-out and couple-in a light signal to the glass fiber, said coupler comprising a substrate, a main line

having a square cross section disposed on said substrate, said main line having at least one branch line extending on said substrate therefrom, said branch line having a rectangular cross section smaller than the square cross section of the main line and having one surface coplanar with the surface of the main line, said method including providing a sheet of thermoplastic material of the thickness equal to the thickness of the main line, stamping the coupler from the sheet with a stamp having a shape corresponding to the configuration of the coupler.

4,142,878

MOLDING HYDROSILICATE MATERIALS

Anthony R. Olszewski, Bath, and Donald R. Parnell, Big Flats, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Sep. 6, 1977, Ser. No. 830,603
Int. Cl.[2] C03B *23/20*; C04B *31/00*; C03C *15/00*
U.S. Cl. 65—18 **10 Claims**

1. A method for molding anhydrous alkali metal silicate material comprising a glass consisting essentially, in mole percent on the oxide basis, of about 3–25% Na_2O and/or K_2O and 50–95% SiO_2, the sum of those components constituting at least 55% of the total composition, into a solid glass article containing about 5–50% by weight water and/or other protonic reagent capable of depolymerizing the silicate network which consists in the steps of:

(a) mixing said anhydrous silicate materials which have a thickness dimension not exceeding about 15 mm. with said water and/or other protonic reagent; and then

(b) forming said mixture into said solid glass article by molding at a temperature of at least 100° C. and at a pressure of at least 500 psi within a closed system.

4,142,879

METHOD FOR PRODUCING LOW EXPANSION CERAMICS

Carl W. Fritsch, Jr., Dushore, and Robert W. Wolfe, Towanda, both of Pa., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Division of Ser. No. 619,206, Oct. 3, 1975, Pat. No. 4,063,955.
This application Dec. 15, 1976, Ser. No. 750,832
Int. Cl.[2] C03B *23/20, 32/00*
U.S. Cl. 65—18 **3 Claims**

1. Process for producing a ceramic body consisting essentially of cordierite solid solution and having a linear thermal expansion of 600 to 900 ppm over the temperature range 25° C. to 800° C., the process consisting essentially of:

(a) forming a glass having a composition consisting essentially of 14 to 18 weight percent MgO, 28 to 32 weight percent Al_2O_3, and 52 to 56 weight percent SiO_2,

(b) reducing the glass to finely divided particles,

(c) forming the particles into a green compact, and

(d) heating the compact at a temperature within the range of 1350° C. to 1425° C. to promote devitrification and sintering of the compact to form a structurally integrated ceramic body.

4,142,880

METHOD AND APPARATUS FOR FEEDING A GLASS MELTING FURNACE

Alojzy Wenda, Littleton, and Leonard E. Olds, Arvada, both of Colo., assignors to Johns-Manville Corporation, Denver, Colo.

Filed Dec. 29, 1977, Ser. No. 865,644
Int. Cl.[2] C03B *3/00*
U.S. Cl. 65—29 **12 Claims**

1. Apparatus for depositing particulate batch material over substantially the entire top surface of molten material in a furnace, comprising;

(a) a carriage; means for supporting said carriage for movement in a generally horizontal plane over said surface;

(b) means for driving said carriage;

(c) a trough-like hopper carried by said carriage for holding said particulate material, the bottom of said hopper having material discharge openings;

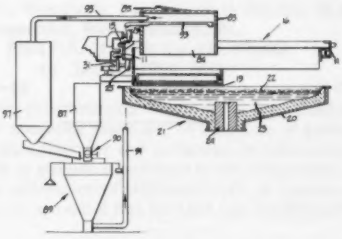
(d) an agitator mounted within said hopper for engaging said particulate material in the vicinity of said openings;

(e) means for driving said agitator whenever said carriage is driven to effect the flow of said particulate material through said openings;

(f) means responsive to the thickness of said deposited material, for controlling the movement of said carriage; and

(g) means responsive to the depletion of said particulate material in said hopper for controlling the supplying of said hopper with particulate material.

11. A method for continually depositing a thin, uniformly thick layer of batch material over substantially the entire top surface of molten material in a furnace comprising:



(a) quickly loading a perforated-bottomed trough with a charge of batch material, such that the batch does not pass through the perforations;

(b) moving the trough in a generally horizontal plane above the molten material while agitating the charge of batch material in the vicinity of the perforations so as to discharge batch through the perforations and onto the upper surface of the molten material in a thin layer, said agitation occurring only during moving of the trough;

(c) stopping motion of the trough after a pre-determined distance of travel and when a desired thickness of batch material is deposited;

(d) sensing the depletion of the charge of batch within the trough and in response thereto automatically recharging the trough; and

(e) sensing the thinning of the batch layer to a thickness less than a certain minimal and in response thereto automatically restarting the depositing motion of the trough.

4,142,881

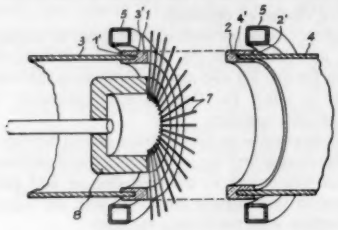
PROCESS FOR WELDING GLASS SO THAT METALLIC ELEMENTS PASS THROUGH THE WELD BEAD

Raymond M. R. G. Louis, 66, Avenue de Paris, 78000 Versailles (Yvelines), France

Filed Jun. 27, 1977, Ser. No. 810,514
Int. Cl.[2] C03B *23/20, 9/00*; C03C *27/02*
U.S. Cl. 65—40 **6 Claims**

1. A process for welding together two glass members so that metallic elements pass through the weld bead formed in a welding zone, comprising the steps of bringing each glass member into intimate contact with a respective metal part in proximity to the welding zone, holding metallic elements between the two glass members in the welding zone and heating the metal parts near the welding zone by way of at least one

high-frequency heating coil winding and thereby heating the welding glass members indirectly to weld the glass members to



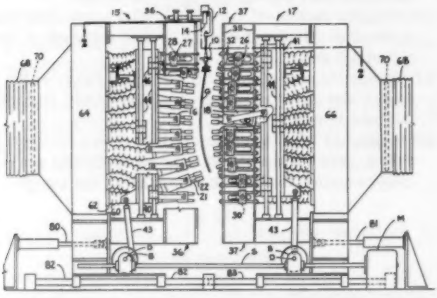
thereby form a weld bead through which the metallic elements extend.

4,142,882

CONTROLLING BUFFETING DURING THE TEMPERING OF GLASS SHEETS

Vaughn R. Imler, Tyrone, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jan. 24, 1978, Ser. No. 871,888
Int. Cl.[2] C03B *27/00*
U.S. Cl. 65—114 **5 Claims**



1. A method of tempering glass sheets comprising:

heating a glass sheet to a temperature suitable for tempering,

suspending the heated glass sheet between a pair of arrays of elongated nozzle boxes from each of which a plurality of nozzles extend toward the glass sheet, directing blasts of cooling tempering fluid through said nozzles toward the glass sheet, imparting individual reversing rotary motion to each nozzle box so as to oscillate the nozzles of each respective array within planes parallel to one another and to swing the nozzles on each side of the glass sheet through repetitive cycles of oscillation in unison with each other, with the cycle of nozzle oscillation on one side of the glass sheet between 75/360 and 105/360 of a cycle out of phase with the cycle of nozzle oscillation on the opposite side of the glass sheet, whereby buffeting of glass sheet is minimized,

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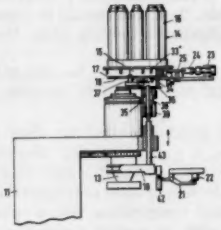
4,142,883

MACHINE FOR WORKING GLASS TUBES AND IN PARTICULAR FOR MAKING CONTAINERS FROM GLASS TUBES

Hans-Joachim Dichter, Sachsendamm 93, 1000 Berlin 62, Fed. Rep. of Germany

Continuation of Ser. No. 758,935, Jan. 13, 1977, abandoned. This application Feb. 6, 1978, Ser. No. 875,316
Claims priority, application Fed. Rep. of Germany, Jan. 23, 1976, 2602946
Int. Cl.[2] C03B *23/12*
U.S. Cl. 65—276 **21 Claims**



1. A machine for working glass tubes, including several chucks circulating on a common axis and sweeping past several processing stations, said machine comprising a stepwise rotating magazine storing several glass tubes, each of said tubes resting by its lower end on a non-rotating supporting plate which has a hole for the glass tubes to fall through for engagement by the chuck therebelow, said stepwise rotating magazine mounted above each of said chucks, said machine having means for rotating said magazine one step at a time, each step corresponding to the distance between two neighbouring tubes to bring the next glass tube to the hole, and a switch, said switch cooperating with said means for rotating said magazine, a mobile arrestor blade positioned between the hole of the supporting plate and said chuck therebelow, means for rotating said mobile arrestor blade, wherein said arrestor blade cooperates with said means for rotating said arrestor blade stepwise to block said hole in said supporting plate to prevent one of said tubes from falling through said hole in said supporting plate until said chuck is empty, and means for disengaging said arrestor blade so that it no longer blocks said hole when said chuck is empty.

4,142,884

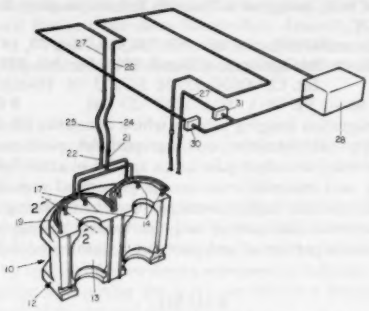
FLUID COOLING OF GLASS MOLDS

Millard L. Jones, Jr., Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Dec. 27, 1977, Ser. No. 864,572
Int. Cl.[2] C03B *9/38*
U.S. Cl. 65—356 **29 Claims**

1. In a glassware forming mold having a forming surface for shaping molten glass, a conduit for liquid coolant positioned in heat transfer communication with said forming surface, and a thermal insulator positioned in the path of heat transfer communication between said forming surface and said conduit for controlling the flow of heat from said forming surface to said conduit, the improvement wherein said thermal insulator com-

prises a fixed, rigid, porous composite layer of compacted powders selected from the group consisting of aluminum,



stainless steel, nickel, refractory oxides, graphite and diatomaceous earth compacted within the mold structure.

4,142,885

METHOD OF PREPARING FERTILIZERS WITH RETARDED NUTRIENT RELEASE

Hans Heumann, Herne; Heinrich Hahn, Gelsenkirchen-Buer; Walter Hilt, Herne; Heinz Liebing, Herne, and Manfred Schweppe, Herne, all of Fed. Rep. of Germany, assignors to Veba-Chemie Aktiengesellschaft, Gelsenkirchen, Fed. Rep. of Germany

Continuation of Ser. No. 688,893, Mar. 22, 1976, abandoned. This application Jul. 11, 1977, Ser. No. 814,756

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1975, 2512386

Int. Cl.[2] C05C *9/00*

U.S. Cl. 71—28 **14 Claims**

1. In a process for preparing a water impervious coating on a slow release fertilizer composition whose fertilizer nutrients are washed out slowly by water consisting of at least one preponderantly water-soluble fertilizer component in particle form by applying thereto a molten water-insoluble inert material which forms a substantially complete and water impervious envelope about the water-soluble fertilizer component, the improvement which comprises initially treating the particles of said water-soluble fertilizer component prior to envelopment with the water insoluble inert material by subjecting the same to accretive granulation under accretive granulation conditions with a sufficient amount of a melt or solution or slurry of at least one fertilizer to at least partially fill any fissures or holes in said particles, said melt, solution or slurry being applied in such an amount that there is at least one weight part of said fertilizer per weight part of said particles.

4,142,886

SUBSTITUTED BENZIMIDAZOLE COMPOUNDS AND USE AS HERBICIDES

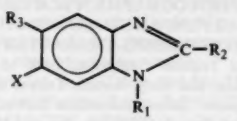
Don L. Hunter, Anaheim, Calif., and Wayne S. Belles, Moscow, Id., assignors to United States Borax & Chemical Corporation, Los Angeles, Calif.

Filed Jun. 17, 1977, Ser. No. 807,592

Int. Cl.[2] A01N *9/22*; C07D *235/08*

U.S. Cl. 71—92 **14 Claims**

1. A compound of the formula



in which R_1 and R_2 are each alkyl of 1 to 3 carbon atoms, R_3 is a branched chain alkyl group of 3 to about 6 carbon atoms, and X is hydrogen or halogen, and the phytotoxic salts thereof.

10. The method of controlling weed growth which comprises applying a phytotoxic amount of a compound of claim 1 to the locus of said weed growth.

4,142,887

STEEL LADLE DESULFURIZATION COMPOSITIONS AND METHODS OF STEEL DESULFURIZATION

Leon Luyckx, New Castle, Pa., assignor to Reactive Metals & Alloys Corporation, West Pittsburgh, Pa.

Filed Feb. 21, 1978, Ser. No. 879,610

Int. Cl.[2] C21C *7/02*

U.S. Cl. 75—58 **8 Claims**

1. A ladle desulfurization composition for desulfurizing molten steel consisting essentially of a mixture of particulate lime, particulate fluorspar and particulate metallic aluminum proportioned to provide deoxidation of the molten steel, with the resultant production of sufficient Al_2O_3 to combine with the fluorspar to provide a flux for CaO and desulfurization.

4,142,888

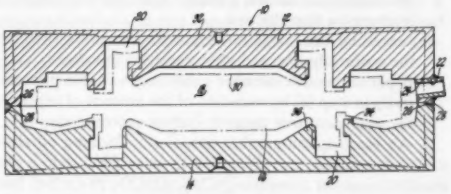
CONTAINER FOR HOT CONSOLIDATING POWDER

Walter J. Rozmus, Birmingham, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.

Continuation-in-part of Ser. No. 692,310, Jun. 3, 1976, abandoned. This application Mar. 16, 1977, Ser. No. 778,009

Int. Cl.[2] B22F *3/14, 7/04*

U.S. Cl. 75—201 **7 Claims**



1. A method for hot consolidating powder of metallic and non-metallic composition and combinations thereof to form a densified compact, said method comprising the steps of:

(a) providing a container by forming a cavity having the general shape of the compact to be produced in a mass of container material which is substantially fully dense and incompressible and is capable of plastic flow at elevated temperatures, the volume of said mass being sufficiently large with respect to the volume of said cavity to form walls entirely surrounding said cavity of sufficient thickness so that the exterior surface of the walls do not closely follow the contour of said cavity,

(b) filling said cavity with a powder to be compacted,

(c) hermetically sealing said container,

(d) heating said container and powder to a temperature at which said mass is capable of plastic flow and the powder is susceptible to compaction and applying external pressure to the entire exterior surface of said container to apply a hydrostatic pressure to the powder in said cavity to densify said powder into a compact, and

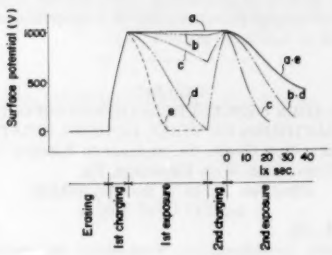
(e) cooling said container and compact and removing said container from said compact.

4,142,889

ELECTROPHOTOGRAPHIC PROCESS USING A CADMIUM SULFIDE PHOTOCONDUCTOR HAVING HYSTERESES CHARACTER

Susumu Tanaka; Takashi Sugiyama, both of Sakai; Kuniki Seino, Kawasaki, and Shoji Kondo, Tokyo, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Japan

Filed Dec. 2, 1977, Ser. No. 857,196
Claims priority, application Japan, Dec. 27, 1976, 51-160373
Int. Cl.[2] G03G *13/22*
U.S. Cl. 96—1 R 9 Claims



1. An electrophotographic process for forming an electrostatic latent image corresponding to an original onto a photosensitive member comprising $CdS.nCdCO_3$ $(0<n\leqq 4)$ and having hysteresis characteristics in which the photosensitivity of said photosensitive member in an image exposing step varies in accordance with the previous exposure and/or charging level, comprising the steps of:

(a) pre-exposing said photosensitive member at an exposure level greater than 10^3 lx.sec.;

(b) uniformly charging said photosensitive member with a specific polarity to a predetermined surface potential;

(c) exposing said photosensitive member with light of varying exposure level;

(d) uniformly charging said photosensitive member to a predetermined surface potential with the same polarity as in charging step (b); and

(e) exposing the image corresponding to the original onto the uniformly charged photosensitive member,

said photosensitive member exhibiting variable photosensitivity in step (e) by variation of the amount of exposure of the photosensitive member during exposure step (c).

2. An electrophotographic process for forming an electrostatic latent image corresponding to an original onto a photosensitive member comprising $CdS.nCdCO_3$ $(0<n\leqq 4)$ having hysteresis characteristics in which the photosensitivity of said photosensitive member in an image exposing step varies in accordance with the previous exposure and/or charging level, comprising the steps of:

(a) pre-exposing said photosensitive member at an exposure level greater than 10^3 lx.sec;

(b) uniformly charging said photosensitive member with a specific polarity to a predetermined surface potential for hysteresis charging;

(c) exposing said photosensitive member with a light source of varying exposure level for hysteresis exposure;

(d) uniformly charging said photosensitive member to a predetermined surface potential with the same polarity as in the hysteresis charging step (b); and

(e) exposing the image corresponding to the original onto the uniformly charged photosensitive member for image exposure,

said photosensitive member exhibiting variable photosensitivity in step (e) by variation of the amount of exposure of the photosensitive member during exposure step (c), whereby the latent image exhibits improved contrast and density in a positive image formed therefrom.

4,142,890

PHOTOSENSITIVE TRANS-EPINDOLIDIONE PIGMENT FOR MIGRATION IMAGING PROCESSES

Melvin S. Bloom, Penfield, and Michael T. Regan, Fairport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 798,957, May 20, 1977, abandoned. This application Dec. 5, 1977, Ser. No. 857,730
Int. Cl.[2] G03G *13/24, 5/12, 5/06*
U.S. Cl. 96—1 PE 9 Claims

1. A migration imaging process which comprises subjecting electrically photosensitive colorant particles positioned between at least two electrodes to an applied electric field and exposing said material to an image pattern of radiation to which the material is photosensitive, thereby obtaining image formation on at least one of said electrodes, characterized in that at least a portion of said particles is trans-epindolidione.

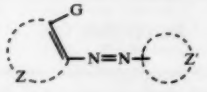
4,142,891

PHOTOGRAPHIC PRODUCTS AND PROCESSES EMPLOYING NONDIFFUSIBLE AZO DYE-RELEASING COMPOUNDS

Brian D. Baigrie; Joseph Bailey; Linda G. Johnston, and Miroslav V. Mijovic, all of Harrow, England, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 5, 1977, Ser. No. 822,188
Claims priority, application United Kingdom, Sep. 10, 1976, 37653/76
Int. Cl.[2] G03C *7/00, 5/54, 1/40, 1/10*
U.S. Cl. 96—29 D 67 Claims

61. A process for producing a photographic transfer image in color in an imagewise-exposed photographic element comprising a support having thereon at least one photosensitive silver halide emulsion layer, said emulsion layer having associated therewith a nondiffusible compound having a releasable azo dye moiety, said compound having the following formula:



wherein:

Z represents the atoms necessary to complete an aromatic carbocyclic or heterocyclic nucleus having at least one ring of 5 to 7 atoms;

Z' is an aromatic carbocyclic or heterocyclic nucleus having at least one ring of 5 to 7 atoms, said Z' having, in a position adjacent to the point of attachment to the azo linkage, either (a) a nitrogen atom in said ring of said nucleus which acts as a chelating site, or (b) a carbon atom in said ring of said nucleus having directly attached thereto a nitrogen atom which acts as a chelating site;

G is a metal chelating group, a salt thereof or a hydrolyzable precursor thereof; said compound also containing a ballasted carrier moiety capable of releasing said diffusible azo dye as a function of development of said silver halide emulsion layer under alkaline conditions, said process comprising:

(1) treating said photographic element with an alkaline processing composition in the presence of a silver halide developing agent to effect development of each of the exposed silver halide emulsion layers;

(2) said dye-releasing compound then releasing said diffusible azo dye imagewise as a function of said development of each of said silver halide emulsion layers;

(3) at least a portion of said imagewise distribution of said azo dye diffusing to a dye image-receiving layer; and

(4) contacting said imagewise distribution of said azo dye with metal ions, thereby forming a metal-complexed, azo dye transfer image.

4,142,892

METHOD OF REDUCING THE DEFECT DENSITY IN A POSITIVE-WORKING PHOTORESIST LAYER USING A SALT OF IMIDAZOLINIUM

Gabor Paal, Stuttgart, Fed. Rep. of Germany, assignor to International Business Machines Corporation, Armonk, N.Y.

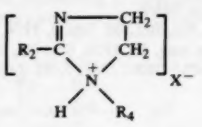
Filed May 20, 1977, Ser. No. 799,048

Claims priority, application Fed. Rep. of Germany, Jun. 12, 1976, 2626419

Int. Cl.[2] G03C 5/00, 1/60

U.S. Cl. 96—36 3 Claims

1. In a process for forming a resist mask, in which a positive working photoresist layer comprising a phenol-formaldehyde novolak resin and a photosensitive o-diazoquinone sulfonic acid ester, is patternwise exposed to actinic radiation and the exposed portion is removed by an aqueous alkaline developer, the improvement which comprises: reducing the defect density caused by the loss of resist during exposure by including in said layer, prior to exposing the layer, an effective amount of a compound of the general formula:



where R_1 is a hydroxyethyl group, R_2 is an alkyl group with 7 to 17 carbon atoms, and X^- is an acid anion selected from the group consisting of acetate, oleate, stearate, and p-toluol-sulfonate.

4,142,893

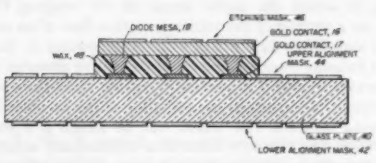
SPRAY ETCH DICING METHOD

Michael G. Adlerstein, Wellesley, and Robert L. Sprague, Malden, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Sep. 14, 1977, Ser. No. 833,316

Int. Cl.[2] G03C 5/00

U.S. Cl. 96—36.2 4 Claims



1. The method comprising the steps of:

providing a plate of transparent material;

providing a composite semiconductor device having a plurality of semiconductor device units disposed upon a first surface of a layer of metal;

covering said semiconductor device units with a protective material;

positioning said composite semiconductor device upon said plate with said semiconductor device units being disposed toward a first surface of said plate;

forming a first photoresistive mask utilizing a first masking means upon a second surface of said plate opposite said first surface of said plate, said first masking means being aligned in accordance with the positions of said semiconductor device units; and

forming a second photoresistive mask upon said first surface of said plate and upon the surface of said layer of metal opposite said semiconductor device units utilizing a second masking means, said second masking means being aligned with said first mask through said transparent plate.

4,142,894

METHOD FOR FORMING IMAGES

Kiyotaka Hori; Takeshi Mikami; Takushi Miyazako, and Kenji Naito, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Jul. 8, 1977, Ser. No. 814,239

Claims priority, application Japan, Jul. 8, 1976, 51-81143

Int. Cl.[2] G03C 5/24, 7/16, 1/76, 1/31

U.S. Cl. 96—63 9 Claims

1. A method for forming images which comprises imagewise exposing and processing at a temperature above about 30° C. a coupler-containing gelatino siver-halide emulsion color photographic light-sensitive element containing in at least one of an uppermost protective surface layer and an uppermost backing layer thereof a matting agent comprising a methyl methacrylate-methacrylic acid copolymer having a methyl methacrylate to methacrylic acid molar ratio of 6:4 to 9:1, a particle size of about 0.2 to about 10μ and a molecular weight of about 10,000 to about 1,000,000.

4,142,895

PHOTOGRAPHIC COLOR DEVELOPER COMPOSITION

Karl Frank, Leverkusen, and Arnfried Melzer, Cologne, both of Fed. Rep. of Germany, assignors to Agfa Gevaert Aktiengeselischaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 5, 1978, Ser. No. 867,048

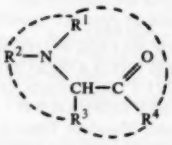
Claims priority, application Fed. Rep. of Germany, Jan. 12, 1977, 2700938

Int. Cl.[2] G03C 5/30, 7/00

U.S. Cl. 96—66.4 13 Claims

1. Photographic color developer composition for color development containing a developer compound of the p-phenylene diamine series, an antioxidizing agent comprised of an α-aminocarbonyl compound, a compound which stabilizes the antioxidizing agent and a sequestering agent, characterized in that compound which stabilizes the antioxidizing agent is a complex-forming organophosphonic acid or a water soluble salt of this acid, which inhibits decomposition of the α-aminocarbonyl compound, and the sequestering agent used is an aminocarboxylic acid or a water soluble salt of this acid and the α-aminocarbonyl compound is represented by the following general formula I or the corresponding enol form:

I



in which

R^1, R^2, R^3 and R^4 which may be the same or different, represent hydrogen; hydrocarbon groups, including alkyl, cycloalkyl or aryl groups, which groups may in turn be substituted, or 5-membered or 6-membered heterocyclic groups containing N and/or O and/or S as ring members, provided that not all four of the groups

R^1, R^2, R^3 and R^4 may be hydrogen;

on in which

R^1 and R^2 together represent the atoms required to complete a heterocyclic ring and/or

R^2 and R^3 together represent the atoms required to complete a heterocyclic ring and/or

R^3 and R^4 together represent the atoms required to complete a heterocyclic or carbocyclic ring and/or

R^4 and R^1 together represent the atoms required to complete a heterocyclic ring.

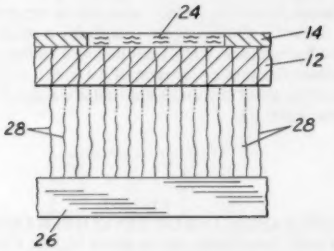
4,142,896
ORGANO TELLURIUM IMAGING MATERIALS

Yew C. Chang, Oakville, Canada, and Stanford R. Ovshinsky, Bloomfield Hills, Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Continuation-in-part of Ser. No. 384,064, Jul. 30, 1973, abandoned, and a continuation-in-part of Ser. No. 383,994, Jul. 30, 1973, abandoned, each is a continuation-in-part of Ser. No. 163,891, Jul. 19, 1971, abandoned. This application Jul. 17, 1975, Ser. No. 596,646

Int. Cl.[2] G03C *5/24, 1/00, 5/04;* **G01D** *15/24*

U.S. Cl. 96—48 HD **52 Claims**



1. A method for producing a record of retrievable information comprising:

providing a layer containing a binder and including an imaging organo-tellurium material which inherently possesses sensitizer properties and/or is admixed with a separate sensitizer, in which tellurium is linked directly to at least one carbon atom of an organo radical of said organo-tellurium material, said imaging organo-tellurium material being of one structure and having one detectable characteristic which is capable of undergoing a change in response to the application of imaging energy in the form of particle or wave radiation to produce a material of different structure having another detectable characteristic,

the step of applying imaging energy in the form of particle or wave radiation to certain portions of said layer to bring about in said certain portions of said layer the formation of a latent image, at which said imaging organo-tellurium material can be changed to said different structure having said other detectable characteristic.

4,142,897
GELATINO SILVER HALIDE PHOTOGRAPHIC MATERIAL HARDENED WITH A REACTION PRODUCT OF A VINYLSULFONYL COMPOUND AND A WATER SOLUBLE COMPOUND

Teiji Habu; Takashi Sasaki; Masahide Tamura; Shinobu Korematsu; Tsuneo Wada; Hiroki Ishii, and Takayoshi Omura, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 711,686, Aug. 4, 1976, abandoned. This application Apr. 13, 1978, Ser. No. 896,897

Claims priority, application Japan, Aug. 9, 1975, 50-97090

Int. Cl.[2] G03C *1/30, 1/76*

U.S. Cl. 96—67 **10 Claims**

1. A light-sensitive silver halide photographic material comprising a support and at least a gelatin-containing layer coated thereon which contains gelatin having been hardened with a product containing at least 2 vinylsulfonyl groups obtained by reacting in solution at a temperature ranging from room temperature to the reflux temperature of the solution a compound (A) having at least 3 vinylsulfonyl groups in the molecular structure with a compound (B) having at least one water-soluble group and at least one group capable of reacting with the vinylsulfonyl group in the molecular structure, wherein said compound (A) is defined by formula (I)

(I) $R(SO_2CH{=}CH_2)_m$

wherein R represents an m-valent acyclic aliphatic hydrocarbon radical which may be substituted, an m-valent phenyl radical which may be substituted or an m-valent cyclohexane radical and m represents an integer of 3 to 6 and wherein in said compound (B) the group capable of reacting with the vinylsulfonyl group, is selected from the group consisting of —SH, =NH and $-NH_2$ and the water soluble group is selected from the group consisting of —OH, —COOH, $-SO_3H$, $-OSO_3H$ and the alkali metal salts thereof, compound (B) being reacted in an amount of 1 to (m−2) moles per mole of compound (A) when the group capable of reacting with the vinylsulfonyl group is —SH or =NH and in an amount of $\frac{1}{2}$ to $\frac{1}{2}$ (m−2) moles per mole of compound (A) when the group capable of reacting with the vinylsulfonyl group is $-NH_2$.

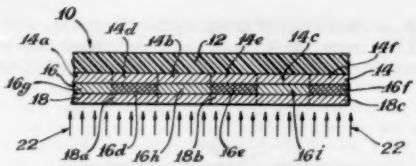
4,142,898
IMAGING FILM OF SENSITIZING LAYER UPON UV-SENSITIVE DIAZO LAYER

Masatsugu Izu, Chicago, Ill., assignor to Energy Conversion Devices, Inc., Troy, Mich.

Continuation of Ser. No. 502,349, Sep. 3, 1974, abandoned. This application Aug. 11, 1976, Ser. No. 713,406

Int. Cl.[2] G03C *1/52, 5/00, 1/64*

U.S. Cl. 96—75 **4 Claims**



1. An imaging film for use as an original recording film comprising an imaging structure normally relatively insensitive to electromagnetic radiation in the visible range, said imaging structure consisting essentially of a flexible plastic substrate, a thin film of a metal or metal-like image forming material, in which the useful image on the imaging film is formed, on a surface of the substrate, a thin film of an energy sensitive material in the form of a diazo compound on the film of image forming material, the energy sensitive material being characterized in that it is normally capable upon the application thereto of electromagnetic radiation in the invisible range of changing between two states, one of which is a state in which the energy sensitive material is substantially soluble or permeable with respect to a given solvent and the other being a state in which it is substantially insoluble or impermeable with respect to said solvent, and a coating of a sensitizing material in contact with the film of energy sensitive material, the sensitizing material consisting essentially of a mixture of (a) at least one aromatic amine capable in the presence of free-radicals of generating dye molecules, (b) an organic halogen compound capable of releasing free-radicals upon exposure to electromagnetic radiation, said organic halogen compound being represented by the formula A—C—X_3 wherein A is a monovalent radical selected from the group consisting of H, Cl, Br and I, unsubstituted alkyl, substituted alkyl, unsubstituted and substituted aryl, and aroyl, and X is a halogen atom selected from the group consisting of I, Cl and Br, and (c) a polymerized resin binder, said sensitizing material being characterized in that it is capable of interreacting at its interface with the energy sensitive material upon application of electromagnetic radiation in the visible range to the imaging film whereby the energy sensitive material undergoes a change in state normally occurring in the energy sensitive material upon application thereto of electromagnetic radiation in the invisible range, the change in state of the energy sensitive material

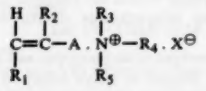
resulting from the interreaction thereof with the sensitizing material enabling a desired image to be formed in the image forming material layer of the imaging film corresponding to the pattern of the areas of the imaging film subjected to electromagnetic radiation in the visible range.

4,142,899
COLOR DIFFUSION TRANSFER PHOTOGRAPHIC UNIT

Yuzuru Sato, Hachioji; Masao Asano, Tokyo; Masao Ishihara, Hino, and Sadatugu Terada, Hachioji, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jun. 22, 1977, Ser. No. 808,909
Claims priority, application Japan, Jun. 25, 1976, 51-75200
Int. Cl.[2] G03C *1/40, 5/54*
U.S. Cl. 96—77 **10 Claims**

1. A color diffusion transfer photographic unit comprising a silver halide photosensitive element having a light-sensitive silver halide emulsion layer, an image-receiving element having a dye-image receiving layer, and a support, said unit comprising a copolymer containing as comonomers a first monomer having quaternary nitrogen and represented by the following formula



[I]

wherein

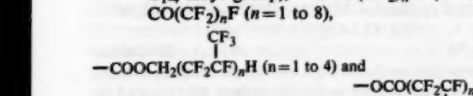
R_1 represents hydrogen or an atomic group necessary to form an N-alkylenemaleimide ring together with A, R_2 represents hydrogen or lower alkyl, A represents alkylene, allylene, aralkylene, or a member selected from the group $—COOR_6—$, $—CONHR_6—$, $—OCOR_6—$ and $—CONR_6—$ wherein R_6 represents alkylene;

R_3, R_4 and R_5 represent respectively, alkyl, allyl, or aryl, or R_4 and R_5 are an atomic group necessary to form a heterocyclic ring or to form a heterocyclic ring together with A, and X represents an anion, and a second monomer having at least one fluorine atom and represented by the following formula

[II]

wherein R_7, R_8, R_9 and R_{10} respectively represent hydrogen, fluorine, lower alkyl, or a member selected from the group consisting of

$—(CF_2)_nF$ ($n=1$ to 8), $—O(CF_2)_nF$ (n=2 to 8), $—O(CF_2)_nH$ (n=2 to 8), $—O(CF_2)_nOC_6F_5$ (n=2 to 3), $—C—CH_2(CF_2)_nH$(n=2 to 8), $—OCH_2(CF_2)_nF$ (n=2 to 8) $—COOCH_2(CF_2)_nH$ ($n=2$ to 8), $—COO(CH_2)_mNR_{11}SO_2(CF_2)_nF$ (m=2 to 3, $n=1$ to 8; R_{11} represents a C_{1-14} alkyl group), $—COO(CH_2)_mNR_{12}CO(CF_2)_nF$ ($m=2$ to 3, $n=1$ to 8; R_{12} represents a C_{1-4} alkyl), $—COO(CH_2)_mNR_{13}CO(CF_2)_nH$ ($m=2$ to 3, $n=1$ to 8; R_{13} represents a C_{1-4} alkyl group), $—OCO(CF_2)_nH$ (n=1 to 8), $—OCO(CF_2)_nF$ ($n=1$ to 8),

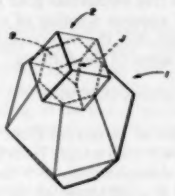


and R_7, R_8, R_9 and R_{10} may be the same or different with the proviso that at least one of R_7 – R_{10} must contain at least one fluorine atom.

4,142,900
CONVERTED-HALIDE PHOTOGRAPHIC EMULSIONS AND ELEMENTS HAVING COMPOSITE SILVER HALIDE CRYSTALS

Joe E. Maskasky, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 18, 1977, Ser. No. 770,242
The portion of the term of this patent subsequent to Jun. 13, 1995, has been disclaimed.
Int. Cl.[2] G03C *1/02*
U.S. Cl. 96—94 R **19 Claims**



1. A converted-halide photographic emulsion comprised of a photographic vehicle as a continuous phase and, as a discrete phase, radiation-sensitive composite silver halide crystals comprised of

multi-faceted, radiation-receptive silver iodide crystals,

converted-halide silver halide crystals at least partially converted from silver chloride to silver bromide forming epitaxial junctions with the silver iodide crystals,

at least half of the facets of the silver iodide crystals being substantially free of epitaxial silver chloride, and

the converted-halide silver halide crystals being limited to less than 75 mole percent, based on the total silver halide forming the composite crystals.

4,142,901
PHOTOGRAPHIC MATERIALS COMPRISING AZO SENSITIZING DYES

Colin Holstead, Abbots; Kenneth N. Kilminster, Leighton, and Michael J. Simons, Eastcote, all of England, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 28, 1977, Ser. No. 846,665
Int. Cl.[2] G03C *1/10, 1/02*
U.S. Cl. 96—139 **8 Claims**

1. In a photographic composition comprising at least one photographic silver halide spectrally sensitized with at least one spectral sensitizing dye, the improvement wherein said dye comprises at least one spectral sensitizing dye represented by the formula:

$$R-N=N-R^1)_m(L)_nR^2$$

wherein m is 0 or 1; n is 0 when m is 0, and is 0 or 1 when m is 1; R is aryl having 6 to 14 carbon atoms, or R^2; R^1 is arylene having 6 to 14 carbon atoms; R^2 is selected from the group consisting of benzotriazole, benzimidazole, indazole, triazole, hydroxytetraazaindene, and tetrazole heterocyclic moieties, and a 6 to 14 membered aryl having one of these moieties as a substituent; and L is a linking group selected from the group consisting of $—CONR^3—$, $—NR^3CO—$, $—SO_2NR^3—$, $—NR^3CONR^3—$, $—NR^3SO_2—$, $—CONR^3CH_2—$ and $—CONR^3R^1—$ wherein R^3 is hydrogen, alkyl having 1 to 10 carbon atoms or aryl having 6 to 14 carbon atoms; said dye containing an acidic nitrogen in said heterocyclic moiety.

4,142,902

ELECTROLESS GOLD PLATING BATHS

Aaron R. Burke, Harrison Township, County of Montgomery, Ohio; William V. Hough, Evans City, and Gerald T. Hefferan, Butler, both of Pa., assignors to Mine Safety Appliances Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 743,220, Nov. 19, 1976, abandoned. This application Jan. 9, 1978, Ser. No. 867,702

Int. Cl.[2] C23C *3/02*

U.S. Cl. 106—1.23 8 Claims

1. In a cyanide free electroless gold plating bath consisting essentially of an aqueous solution of a gold (III) salt and a reducing agent therefor, the improvement of a tertiary amine borane reducing agent of the formula

$$RO(C_aH_{2a}O)_xC_bH_{2b}NR'R''BH_3$$

wherein a is a zero or an integer from 1 to 3, x is zero or an integer from 1 to 4, b is an integer from 1 to 5 and R, R' and R'' are alkyl groups containing up to 5 carbon atoms, said bath being maintained at a pH above about 12.

4,142,903

CORROSION RESISTANT COATING COMPOSITION

Michael Antonelli, Sr., 620 Trebisky, South Euclid, Ohio 44143

Continuation-in-part of Ser. No. 674,095, Apr. 6, 1976, abandoned. This application Oct. 25, 1977, Ser. No. 844,898

Int. Cl.[2] C09D *5/08*

U.S. Cl. 106—14.24 7 Claims

1. A one-part corrosion resistant coating composition for metallic substrates comprising:

(a) about 15% to about 30% by volume of an asphaltic bitumen having a needle penetration in the range of about 25 to about 35;

(b) about 20% to about 60% by volume of a petroleum sulfonate;

(c) about 4% to about 16% by volume of an organic adhesive and corrosion inhibitor selected from the group consisting of a liquid polyamide resin having a Brookfield viscosity in the range of about 6 to about 10 poises at a temperature of 75° C., rosin oil and mixtures thereof; and

(d) an organic solvent in an amount sufficient to yield a composition having a viscosity suitable for spraying of said composition.

4,142,904

FLAME RETARDANT POLYCARBOXY ALKYL AND ARYL PHOSPHONATES

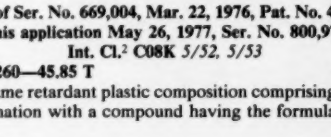
Edward N. Walsh, New City, and Milton L. Honig, Bronx, both of N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 669,004, Mar. 22, 1976, Pat. No. 4,044,074. This application May 26, 1977, Ser. No. 800,976

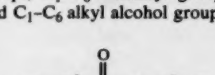
Int. Cl.[2] C08K *5/52, 5/53*

U.S. Cl. 260—45.85 T 5 Claims

1. A flame retardant plastic composition comprising a plastic in combination with a compound having the formula:



wherein R is selected from group consisting of C_2–C_{10} alkylene, arylene, C_7–C_{20} alkyl substituted arylene, C_3–C_{20} cycloalkylene, C_4–C_{20} vinylene and derivatives of the foregoing containing non-labile pendant halogens, C_2–C_6 alkyl groups, C_1–C_6 haloalkyl groups, vinyl groups, ether groups and C_1–C_6 alkyl alcohol groups; R^1 is selected from the group consisting of C_1–C_{10} alkyl, aryl, C_7–C_{20} alkyl substituted aryl, C_2–C_{10} alkenyl, C_1–C_{10} alkoxy, aryloxy, and C_3–C_{20} cycloalkyl, and derivatives thereof containing non-labile pendant halogens, C_1–C_6 alkyl groups, C_1–C_6 haloalkyl groups, vinyl groups, ether groups, and C_1–C_6 alkyl alcohol groups, and



and OR^4H wherein R^4 has the same definitions as R, and R^4 and R can be the same or different; R^2, R^3 and R^5 are straight or branched C_1–C_{10} alkylene and can be the same or different; i is an integer from about 2 to about 20; the integers represented by m and n are different and are 0 or 1.

4,142,905

WATERLESS INK FOR NON-IMPACT JET PRINTERS

Theodore M. Cooke, Southfield, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed Sep. 9, 1977, Ser. No. 832,039

Int. Cl.[2] C09D *11/02*

U.S. Cl. 106—22 6 Claims

1. A waterless ink for a non-impact jet printer consisting essentially of:

89% to 93% by weight of a low molecular weight glycol having a liquid phase within the range of 35° C. to 70° C. and at operating temperatures of the non-impact jet printer, and

between 3–6% by weight of an inorganic salt electrolyte and between 3–6% by weight of a dye which is soluble in the glycol.

4,142,906

GLASS COMPOSITION FOR ALKALI-RESISTANT GLASS FIBER

Yoshihiro Iizawa, Tokorozawa, Japan, assignor to Ikebukuro Horo Kogyo Co., Ltd., Japan

Filed Feb. 27, 1978, Ser. No. 881,893

Claims priority, application Japan, Jun. 6, 1977, 52-65840; Jan. 27, 1978, 53-7373

Int. Cl.[2] C03C *13/00, 3/08;* C04B *31/06*

U.S. Cl. 106—50 4 Claims

1. A glass composition for alkali-resistant glass fiber, said composition having a glass liquification temperature of 750°–900° C., which comprises:

(a) 30–48% by weight of SiO_2;

(b) 12–26% by weight of ZrO_2;

(c) 14–26% by weight of R_2O (wherein R represents Na, K or Li);

(d) 1–11% by weight of R'O (wherein R' represents Ca, Ba, Mg, Zn or Co);

(e) 1–5% by weight of CaF_2;

(f) 0.1–10% by weight of $M_2(SiF_6)$ (wherein M represents Na, K or Li); and

(g) 0.1–12% by weight of B_2O_3.

4,142,907

HIGH SODIUM OXIDE COMPOSITION USEFUL IN THE MANUFACTURE OF GLASS

William H. Manring, Hamilton, Ohio; Patrick M. DeBello, Lincroft, and Eugene G. Imperato, Willingboro, both of N.J., assignors to FMC Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 755,636, Dec. 30, 1976, abandoned. This application May 11, 1978, Ser. No. 904,947

Int. Cl.[2] C03C *3/04*

U.S. Cl. 106—52 20 Claims

1. A dry granulated prefused high sodium oxide composition that does not readily absorb water or carbon dioxide and is substantially free of carbonates consisting essentially of sodium, potassium, aluminum, magnesium, silicon and calcium oxides, useful as an additive in the manufacture of glass; said composition being characterized by a sodium content (determined as sodium oxide) of from 25 to as much as 58 weight

percent and a silica content of less than 35 weight percent, the ratio of sodium oxide to aluminum, magnesium and calcium oxides being in the range of from about 0.67:1 to about 1.13:1 and the ratio of silicon dioxide to sodium, potassium, aluminum, calcium and magnesium oxides being in the range of from about 0.35:1 to about 0.57:1.

4,142,908

REFRACTORY INSULATING PRODUCTS HAVING CONTROLLED POROSITY AND THE PREPARING THEREOF BY THE WET METHOD

Jean Daviot, Saint-Cheron, and Michel Marchais, Orchies, both of France, assignors to Groupement pour les Activites Atomiques et Avancees, LePlessis-Robinson, France

Continuation-in-part of Ser. No. 621,102, Oct. 9, 1975, abandoned, which is a division of Ser. No. 473,979, May 28, 1974, abandoned. This application Feb. 27, 1978, Ser. No. 881,337

Claims priority, application France, May 30, 1973, 73 19773; Feb. 21, 1974, 74 05959

Int. Cl.[2] C04B *7/34*

U.S. Cl. 106—64 **5 Claims**

1. A refractory product offering great stability to repeated thermal shocks and to corrosion and erosion by molten aluminum, having an apparent density of 1.1 to 1.6 and a thermal conductivity between 0.1 and 0.5 Kcal/sq m/m/° C./h, obtained by firing at a temperature below the sintering temperature a mixture of refractory aluminous cement and of a ceramic mixture of

(a) a refractory aggregate selected from the group consisting of tabular alumina, corindon, stabilized zirconia and calcium zirconate and

(b) refractory ceramic polycrystalline fibers comprising at least 70% alumina and at most 30% silica, the proportion of ceramic fibers being higher than 10% of the amount of refractory aggregate, and the proportion of the ceramic mixture being between 10 and 70% of the total mixture.

4,142,909

METHOD AND COMPOSITION FOR CONTROLLING CONTRACTION IN SETTING CEMENTITIOUS SYSTEMS THROUGH THE ADDITION OF GAS GENERATING AGENTS

Robert W. Gaines, Darien, Conn., assignor to Construction Products Research, Inc., Old Greenwich, Conn.

Filed Sep. 11, 1975, Ser. No. 612,239

Int. Cl.[2] C04B *1/00*

U.S. Cl. 106—87 **10 Claims**

1. A method of controlling contraction of hydraulic cementitious systems during setting and hardening comprising adding to the system a gas generating organic agent having a normal thermal decomposition temperature above the temperatures encountered during the setting and hardening of the hydraulic cementitious system, without activators, capable of chemically generating gas in the system during setting and hardening when liquid for setting and hardening is present therein without the addition of activating agent additives and without specific temperature control other than the ordinary ambient temperature conditions of setting and hardening being necessary for gas generation in an amount effective to counteract the contraction tendency of the cementitious system.

4,142,910

LIGHT CONSTRUCTION CONCRETE OF SPECIALLY LOW DENSITY

Stefan Kraemer, Essen; Michael Seger, Krefeld-Linn, and Alois Seidl, Thurnstein, all of Fed. Rep. of Germany, assignors to Wasag Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Sep. 10, 1974, Ser. No. 504,835

Claims priority, application Fed. Rep. of Germany, Sep. 11, 1973, 2345692

Int. Cl.[2] C04B *7/02*

U.S. Cl. 106—97 **8 Claims**

1. In a light weight structural concrete composition comprising, water, cement and light weight fillers of inorganic, foamed, bloated or blown aggregates compatible with concrete and approximately spherical or ellipsoidal in shape and in proportions corresponding to the size characteristic wherein 3 to 18 percent by weight passes through 0.25 mm mesh, 12 to 49 percent by weight passes through 1.0 mm mesh, 21 to 62 percent by weight passes through 2.0 mm mesh, 36 to 74 percent by weight passes through 4.0 mm mesh, 60 to 88 percent by weight passes through 8.0 mm mesh, and 100 percent by weight passes through 16.0 mm mesh, the improvement comprising said light weight fillers having grain densities and strength increasing continuously or in a plurality of steps with increasing grain diameter while the grain absorptions simultaneously decrease continuously or in more than two steps.

4,142,911

SAG RESISTANT ADHESIVE COMPOSITIONS

Jeffrey R. Ellis, Hightstown, N.J., and Herman B. Wagner, Perkasie, Pa., assignors to Tile Council of America, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 749,946, Dec. 20, 1976, Pat. No. 4,082,563. This application Dec. 5, 1977, Ser. No. 857,803

Int. Cl.[2] C04B *7/02*

U.S. Cl. 106—97 **37 Claims**

1. A sag resistant adhesive composition which does not contain a water retentive agent, the composition comprising in admixture:

(A) an adhesive material selected from the group consisting of (a) materials capable of hardening at room temperature upon admixture with water, the materials being selected from among hydraulic cements and plaster of paris, and (b) room temperature hardening polymers; and

(B) at least one non-fibrous compound selected from the group consisting of gelatinous metal hydroxides and metal salts capable of forming a gelatinous or hydrated hydroxide in the presence of a water soluble alkaline material, the compound or compounds being present in an amount at least sufficient to provide the desired sag resistance.

4,142,912

LANDFILL MATERIAL

Dean A. Young, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 818,305, Jul. 25, 1977, abandoned. This application Jul. 17, 1978, Ser. No. 924,897

Int. Cl.[2] C04B *31/02*

U.S. Cl. 106—98 **17 Claims**

1. A process for treating an arsenic-containing waste to produce an arsenic-containing landfill material essentially completely impervious to the arsenic-leaching effects of ground or rain waters, which process comprises:

(a) admixing said arsenic-containing waste with (1) sufficient of one or more additive components selected from the group consisting of those alkaline earth metal and manganese compounds soluble in water at 25° C. to the extent of at least 100 grams per liter such that said one or more additive components are present in a total mole ratio to arsenic of between about 1 and 10, calculated as the total moles of alkaline earth and manganese metals in said one or more additive components to the total moles of arsenic

in said arsenic-containing waste and (2) a setting agent comprising Portland cement and sand, said admixing being accomplished in the presence of sufficient water and with sufficient of said setting agent to produce a mixed material having the consistency of wet concrete;

(b) curing the mixed material under conditions sufficient to cause solidification; and

(c) recovering a rock-like aggregate essentially completely impervious to the leaching of arsenic therefrom by ground or rain waters.

4,142,913

PROCESS FOR MAKING A PRECURSOR OF A SOLUTION OF CELLULOSE

Clarence C. McCorsley, III, and Julianna K. Varga, both of Asheville, N.C., assignors to Akzona Incorporated, Asheville, N.C.

Filed Jul. 26, 1977, Ser. No. 819,081
Int. Cl.[2] C08L *1/02*
U.S. Cl. 106—186 **14 Claims**

1. A process for making a solid precursor of a solution of cellulose in a tertiary amine oxide which comprises dissolving cellulose in a tertiary amine oxide solvent for cellulose containing a non-solvent for the cellulose compatible with said amine oxide solvent at a temperature where a liquid solution is obtained and cooling the solution until it solidifies to form a solid cellulosic product containing absorbed amine oxide and non-solvent.

4,142,914

PIGMENTS WHICH ARE STABLE IN NITROCELLULOSE

Klaus Bast, Bad Durkheim, and Erwin Plankenhorn, Ludwigshafen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Rheinland-Pfalz, Fed. Rep. of Germany

Filed Feb. 17, 1978, Ser. No. 878,914
Claims priority, applicator Fed. Rep. of Germany Feb. 24, 1977, 2707972
Int. Cl.[2] C09D *11/02, 11/14*
U.S. Cl. 106—288 Q **4 Claims**

1. A pigment which is stable in nitrocellulose and comprises at least one trisamino-triarylmethane dye and molybdo-phosphoric acid or molybdo-tungsto-phosphoric acid (which heteropolyacids may in addition contain silicic acid), and which in addition contains from 0.1 to 10% by weight, based on the pigment formulation, of a compound which possesses at least one $-N(CH_2-COOH)_2$ group, said compound being selected from the group consisting of nitrilotriacetic acid, ethylene diaminetetraacetic acid, diethylenetriaminepentaacetic acid, alkali metal salts or ammonium salts thereof, and mixtures thereof.

4,142,915

PROCESS FOR THE PREPARATION OF YELLOW IRON HYDROXIDE PIGMENT

Tullio Pellizzon, Paderno Dugnano, (Milan); Luigi Piccolo, and Antonio Paolinelli, both of Milan, all of Italy, assignors to EUTECO S.p.A., Sassari, Italy

Filed Nov. 1, 1977, Ser. No. 847,488
Claims priority, application Italy, Jan. 11, 1977, 19150 A/77
Int. Cl.[2] C09C *1/24*
U.S. Cl. 106—304 **17 Claims**

1. A process for the preparation of ferrous hydroxide pigment FeO(OH), of a yellow color in acicular shape with average dimensions of the needles of the order of 0.12 × 0.7 microns, from ferrous sulphate, an inorganic base and an aromatic organic nitroderivate, including:

(a) a first stage comprising forming a suspension of nuclei of the ferrous hydroxide pigment FeO(OH) by reacting ferrous sulfate in aqueous solution, aqueous ammonia and an aromatic nitro-derivate in a molar ratio of ammonia to ferrous sulfate of less than about 1:1 and a molar ratio of ammonia to nitro groups of the aromatic nitro-derivatives of about equal to or less than 6:1, at temperatures in the range of from about 20° C. to about 70° C., until the pH of the mixture becomes substantially constant, to form a suspension of ferrous hydroxide pigment containing solids — evaluated as FeO(OH) — of less than 80 grams per liter; thereafter

(b) a second stage comprising mixing the nuclei with an aqueous solution of ferrous sulfate and an organic nitro derivate at a temperature of about 20° C. to about 70° C. and adding aqueous ammonia to the mixture, slowly in order to avoid raising the pH of the mixture above about 8.5, and in amounts up to a maximum molar ratio of ammonia to the organic nitroderivate of between about 6:1 to 12:1 to form a suspension of ferrous hydroxide pigment with a solid content not exceeding about 120 grams per liter, the amount of nuclei utilized being from about 8 to 20 parts by weight for each 100 parts by weight of pigment, and

(c) recovering the pigmentary ferrous hydroxide and the amine formed by the reaction.

4,142,916

METHOD FOR PREPARING A NON-HYGROSCOPIC LACTULOSE-CONTAINING POWDER

Katsuhiro Ogasa; Mamoru Tomita, both of Yokohama, and Teruhiko Mizota, Tokyo, all of Japan, assignors to Morinaga Milk Industry Co., Ltd., Tokyo, Japan

Filed May 3, 1978, Ser. No. 902,752
Claims priority, application Japan, May 26, 1977, 52-61675
Int. Cl.[2] C13K *13/00;* C13F *1/14*
U.S. Cl. 127—63 **3 Claims**

1. A method for preparing a non-hygroscopic lactulose-containing powder characterized by comprising the steps:

(1) adding at least 0.8 part by weight of ethyl alcohol to 1 part by weight of highly hygroscopic lactulose-containing powder the lactulose content of which is above 55% by weight while adjusting the amount of ethyl alcohol to be added so that the water content in mixture is below 2% by weight;

(2) allowing the resulting mixture to stand or stirring it at a temperature below the boiling point of ethyl alcohol for at least 1 hour, and cooling, if necessary;

(3) separating an ethyl alcohol insoluble lactulose-containing material precipitated; and

(4) removing ethyl alcohol from said material.

4,142,917

TREATMENT OF ZINC SURFACES TO FORM A ZINC PHOSPHATE COATING

Kuniji Yashiro, Kanagawa; Shigeki Saida, Yokohama, and Yoshihide Sano, Yachiyo, all of Japan, assignors to Oxy Metal Industries Corporation, Warren, Mich.

Filed Sep. 26, 1977, Ser. No. 836,813
Claims priority, application Japan, Sep. 25, 1976, 51-115047
Int. Cl.[2] C23F *7/12*
U.S. Cl. 148—6.16 **7 Claims**

1. A process for forming a zinc phosphate coating on a zinc or zinc alloy surface comprising contacting the surface with an aqueous solution free of nitrate and ammonia and consisting essentially of

0.1 to 5 g/l	zinc ion
5 to 50 g/l	phosphate
0.5 to 5 g/l	hydrogen peroxide
1 to 10 parts	nickel or cobalt ion per part of zinc

and thereafter drying the coating and then contacting the coated surface with an aqueous chromium solution without an intervening rinse step.

4,142,918

METHOD FOR MAKING FINE-GRAINED Cu-Ni-Sn ALLOYS

John T. Plewes, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 23, 1978, Ser. No. 871,452
Int. Cl.[2] C22F *1/08*
U.S. Cl. 148—11.5 C 16 Claims

1. Method for producing an article of manufacture comprising a fine-grained body of an alloy comprising the steps, carried out in the order stated, of (1) partially homogenizing a body of the alloy of which an aggregate amount of at least 90 weight percent consists of Cu, Ni, and Sn, said aggregate amount having a Ni content in the range of 5 to 30 weight percent and a Sn content in the range of 4 to 12 weight percent by maintaining said body at a first temperature which is in a first temperature range of 50° C. below to 50° C. above the equilibrium boundary between an alpha phase and an alpha-plus-gamma phase of said alloy for a first time which is in a first time range having a first lower time limit and a first upper time limit, said first lower time limit and said first upper time limit being related to said temperature according to Arrhenius relationships, said first lower time limit being 4 hours and said first upper time limit being 6 hours when said first temperature is 50° C. below said equilibrium boundary, and said first lower time limit being 0.5 hours and said first upper time limit being 1 hour when said first temperature is 50° C. above said equilibrium boundary, (2) cooling said body at a rate sufficiently fast to retain in said alloy a substantial amount of the structure developed by partially homogenizing said body and maintaining said alloy at a second temperature which is in a second temperature range of 75° C. below to 25° C. above the metastable boundary of said alloy, said metastable boundary being CHARACTERIZED IN THAT at temperatures above said metastable boundary but below said equilibrium boundary said alpha-plus-gamma phase is nucleated homogeneously while at temperatures below said metastable boundary said alpha-plus-gamma phase is nucleated discontinuously, aging being carried out for a second time which is equal to or greater than a second lower time limit, said second lower time limit being related to said second temperature according to an Arrhenius relationship, said second lower time limit being 20 hours when said second temperature is 75° C. below said metastable boundary and said second lower time limit being 1 hour when said second temperature is 25° C. above said metastable boundary, (3) completely homogenizing said body by maintaining said alloy at a third temperature which is in a third temperature range of 70° to 25° C. below the solidus of said alloy for a third time which is equal to or greater than 1 hour, and (4) cooling said alloy at a rate sufficiently fast to retain a substantial amount of the structure developed by completely homogenizing said body.

4,142,919

MANUFACTURE OF ELONGATED BODIES OF HIGH STRENGTH CARBON STEEL

Lionel Maiffredy, Vaulz-en-Velin; Luc Peeters, Tronville-en-Barrois, and Maurice Theolier, Vaulx-en-Velin, all of France, assignors to Sodetal, Societe Pour le Developpement du Filmentallique, Paris, France

Filed Mar. 14, 1978, Ser. No. 886,434
Claims priority, application France, Mar. 14, 1977, 77 07764
Int. Cl.[2] C21D *9/52*
U.S. Cl. 148—12 R 17 Claims

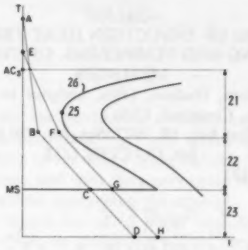
1. A process for the manufacture of an elongated body of high strength carbon steel, which comprises subjecting a body of such steel, at ambient temperature, to a first operation for reducing its cross-section essentially up to the limit of drawability, then heat treating the body at a temperature lower than the globulisation temperature of cementite so as to give the body further drawability, cooling the heat treated body to ambient temperature, and then subjecting the said body at ambient temperature to a second operation for reducing its cross-section.

4,142,920

PROCESS OF MANUFACTURING A STEEL STRIP BY ROLLING, AND STRIP OBTAINED BY SAID PROCESS

Bernard Pflieger, Chamalieres, and Andre Reiniche, Beaumont, both of France, assignors to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

Filed Jun. 3, 1977, Ser. No. 803,123
Claims priority, application France, Aug. 6, 1976, 76 17479
Int. Cl.[2] C21D *9/52*
U.S. Cl. 148—12 B 14 Claims



1. A process of manufacturing a strip with rounded edges, intended for tire reinforcements by rolling a carbon steel wire of circular cross section in a single pass between rolls of a rolling mill, characterized by the fact that the wire is heated as it enters between the rolls of the rolling mill to a temperature above the AC 3 transformation point of the steel used, the heating and rolling being conducted in a neutral atmosphere.

4,142,921

HIGH TEMPERATURE ALLOY

Uwe Hildebrant, Wiesloch; Andrew R. Nicoll, Oftersheim, and Peter R. Sahm, Neckargemünd, all of Fed. Rep. of Germany, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed May 9, 1978, Ser. No. 904,267
Claims priority, application Fed. Rep. of Germany, Sep. 21, 1976, 2642344
Int. Cl.[2] C22C *19/07*
U.S. Cl. 148—32 5 Claims

1. In a method for producing a high temperature alloy having increased creep strength, which comprises the steps of:

(a) forming a melt which consists essentially of 55–58 wt.% cobalt, 39–41 wt.% chromium, and 2.2–2.4 wt.% carbon; and

(b) solidifying said melt to obtain an alloy which is essentially a solid solution of chromium in cobalt as base alloy in which are embedded essentially parallel carbide filaments; the improvement which comprises adding to said melt an amount of magnesium effective to deoxidize said alloy.

4. The high temperature alloy produced by the method of claim 1.

4,142,922
HIGH STRENGTH LOW ALLOY STEEL CONTAINING COLUMBIUM AND VANADIUM

John K. Abraham, Broadview Heights, and Peter J. Vander Arend, Brecksville, both of Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio

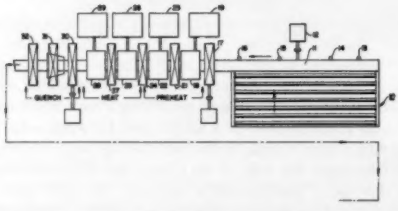
Continuation of Ser. No. 727,126, Sep. 27, 1976, abandoned. This application Feb. 2, 1978, Ser. No. 874,560
Int. Cl.[2] C22C *38/06, 38/12*
U.S. Cl. 148—36 8 Claims

1. A high strength steel product produced by hot rolling and so produced, having yield strength of at least 80 ksi, transverse and longitudinal bendability each with inside radius of bend at least as small as 2T, and transverse-to-longitudinal CVN impact strength ratio greater than 0.45, said steel being aluminum-killed and consisting essentially of 0.03 to 0.06% C, 0.3 to 0.5% Mn, 0.02 to 0.15% Cb, 0.10 to 0.20% V, 0 to less than 0.2% Si, the total of Cb and V being at least 0.18%, 0.01 to 0.2% Al, and from 0 to the following maximum percentages of the following elements: 0.03 max. P, 0.03 max. S, 0.025 max. N, balance iron and incidental elements.

4,142,923
METHOD OF INDUCTION HEAT TREATING, QUENCHING AND TEMPERING, OF STRUCTURAL MEMBERS

George L. Satava, Hudson, Ohio, assignor to Midland Steel Products Co., Cleveland, Ohio

Filed Aug. 19, 1977, Ser. No. 826,187
Int. Cl.[2] C21D *1/18*
U.S. Cl. 148—131 21 Claims



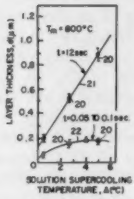
1. A method of induction heat treating and quenching a structural member of low carbon alloy steel to a uniform martensitic structure, said member having a web and at least one flange substantially perpendicular thereto which consists of:
(a) Induction preheating to 900° F. approximately in at least one step;
(b) Continuing the induction preheating to austenitizing temperature in the range of 1450° to 1750° F. while avoiding localized overheating;
(c) Liquid quenching the member with a multiplicity of nozzles immediately, said nozzles being disposed and regulated to minimize distortion;
(d) Restraining both the member web and flange in progressive contour roll stands to below 900° F. to minimize distortion sequentially and in close proximation to the quenching operation;
(e) Induction tempering the member to a temperature in the range 750° F. to 1000° F.; and
(f) Again restraining the member while cooling to avoid distortion by passing the member through a set of roll forming stands.

4,142,924
FAST-SWEEP GROWTH METHOD FOR GROWING LAYERS USING LIQUID PHASE EPITAXY

Jaw J. Hsieh, Burlington, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Dec. 16, 1976, Ser. No. 751,518
Int. Cl.[2] H01L *21/208*
U.S. Cl. 148—171 9 Claims

1. A liquid phase epitaxy method for growing a thin film of a first semiconductor on a second semiconductor substrate comprising:
supercooling a solution comprising the compound of said first semiconductor to a temperature below the equilibrium temperature of said solution,
heating said substrate to the temperature of said supercooled solution,
sliding said solution over and in contact with said substrate at a speed where the growth time during which they are in contact is such that growth of the film by mechanical



convection of the solution-substrate interface caused by sliding the solution over and in contact with the substrate dominates that growth of the film which occurs by the diffusion mechanism during the time that the solution is in contact with the substrate,
whereby an ultra-thin layer of said first semiconductor compound from the solution is formed on said second semiconductor substrate during said growth time.

4,142,925
METHOD OF MAKING SILICON-INSULATOR-POLYSILICON INFRARED IMAGE DEVICE UTILIZING EPITAXIAL DEPOSITION AND SELECTIVE ETCHING

Gerard J. King, Alexandria, and Joseph F. Martino, Jr., Falls Church, both of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 13, 1978, Ser. No. 896,069
Int. Cl.[2] H01L *21/20, 27/14*
U.S. Cl. 148—175 2 Claims

1. A method of making an infrared imaging device beginning with a silicon growth substrate and including the steps of:
(a) growing on said substrate a layer of epitaxial silicon;
(b) growing on said layer of epitaxial silicon an insulating layer;
(c) growing on said insulating layer a support layer of polysilicon;
(d) removing said growth substrate;
(e) applying a first mask to said epitaxial layer and etching to form islands of epitaxial silicon on said silicon dioxide layer;

(f) removing said first mask, applying a second mask, and doping at least one of said islands as a CCD region;
(g) removing said second mask, applying a third mask, and doping others of said islands as infrared sensitive detectors;
(h) removing said third mask, depositing a metallization layer, applying a fourth mask, and patterning conductors on said detectors, said insulating layer; and
(i) removing said fourth mask.

4,142,926

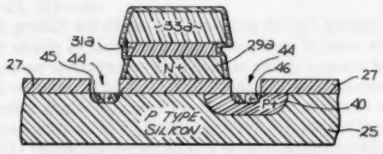
SELF-ALIGNING DOUBLE POLYCRYSTALLINE SILICON ETCHING PROCESS

William L. Morgan, Sunnyvale, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 771,521, Feb. 24, 1977, abandoned, which is a continuation-in-part of Ser. No. 626,859, Oct. 29, 1975, abandoned. This application Jun. 12, 1978, Ser. No. 914,624

Int. Cl.[2] H01L *21/22, 21/308*

U.S. Cl. 148—187 **12 Claims**



9. A process for fabricating an MOS floating gate memory device at a predetermined area on a silicon substrate, said substrate including a first continuous silicon oxide layer covering at least said area and a first polycrystalline silicon layer disposed on said first silicon oxide layer such that said first polycrystalline silicon layer is insulated from said substrate at said area comprising the steps of:

doping a said first polycrystalline silicon layer;

forming a second oxide layer on said first silicon layer;

forming a second silicon layer on said second oxide layer;

fabricating a gate masking member at said area on said second silicon layer;

etching said second silicon layer to form an upper gate;

removing exposed portions of said second oxide layer; and, subjecting said first and second silicon layers to an etchant which discriminates between said doped first silicon layer and said second silicon layer so as to etch only said first silicon layer to form a lower gate;

whereby said upper gate acts as a mask during the etching of said lower gate, thereby assuring that said lower gate is in alignment with said upper gate.

10. The process defined by claim **9** including the formation of a source and drain region in said substrate adjacent to said gates.

4,142,927

FREE RADICAL EXPLOSIVE COMPOSITION

Franklin E. Walker, 15 Way Points Rd., Danville, Calif. 94526, and Richard J. Wasley, 4290 Colgate Way, Livermore, Calif. 94550

Filed Sep. 4, 1975, Ser. No. 610,166

Int. Cl.[2] C06B *45/10, 25/34, 25/32, 25/04*

U.S. Cl. 149—194 **11 Claims**

1. A composition of matter comprising:

(1) a major portion of a metastable explosive capable of being detonated by a mechanical, thermal or electrical shock and having a detonation velocity from 1,500 to 10,000 meters per second, and

(2) from 0.1 to 20 weight percent of a getter additive, or combination of getter additives, which is (i) capable of capturing or deactivating free radicals or ions during the initiation of said explosive, (ii) not an explosive, and (iii) is selected from the group consisting of C_4 to C_{32} isocyanates, C_2 to C_{30} olefins, iodine, or mixtures thereof.

4,142,928

METHOD AND APPARATUS FOR THE PRODUCTION OF EXPLOSIVE SLURRY

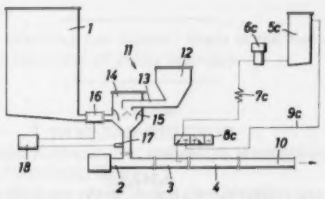
Iain G. H. Stewart, Zug, Switzerland, assignor to Niepmann AG, Walchwil, Switzerland

Filed Jan. 13, 1977, Ser. No. 759,117

Claims priority, application Fed. Rep. of Germany, Jan. 27, 1976, 2602924

Int. Cl.[2] C06B *21/00*

U.S. Cl. 149—109.6 **9 Claims**



1. A process for the production of slurry explosives composed of liquids containing fuels and oxidizing agents, the aggregate condition of the slurry being variable by addition of cross-linking agents, and with the slurry being fed for packing to a packing machine, comprising the steps of

batch mixing liquids including water as a soluble diluent with fuels, oxidizing and gelling agents, forming a slurry,

pumping the slurry through a pipe to form a continuous and constant material flow, the pumping causing a continuous metering of the material flow,

continuously adding cross-linking agent at a predetermined controlled rate to the metered material flow,

subsequently continuously distributing the cross-linking agent uniformly in the material flow by continuous, substantially non-turbulent mixing and automatically continuously thickening the material flow by action of the cross-linking agent for a thickening time which is controllable, corresponding to the viscosity requirements of a subsequent packing process,

subsequently continuously, without accumulation, feeding the thickened material flow to a cartridging machine for packing, the pumping providing a sufficient pumping pressure to overcome the pressure drop in the pipe, the mixing and the thickening steps, and

controlling the adding and metering steps to provide a constant viscosity at each stage in the operation of the process.

4,142,929

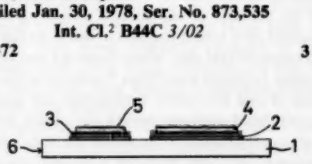
PROCESS FOR MANUFACTURING TRANSFER SHEETS

Kazuo Otomine, 533, Sanjo-cho, Takamatsu-shi, Kagawa-ken, and Mototsugu Matsuo, 4-36, Nishi 2-chome, Nakazaki, Kita-ku, Osaka-shi, both of Japan

Filed Jan. 30, 1978, Ser. No. 873,535

Int. Cl.[2] B44C *3/02*

U.S. Cl. 156—72 **3 Claims**



1. A process for manufacturing transfer sheets comprising the steps of:

forming on the surface of a base sheet an adhesive layer for temporary adhesion of short fibers, to the base sheet,

temporarily sticking short fibers to said adhesive layer to form a short fiber layer,

applying an adhesive in the form of emulsion or solution in said short fiber layer to a desired pattern to form a transfer adhesive layer, bonding the upper part of said fibers in said pattern said adhesive retaining elasticity after curing, and

applying a heat-sensitive adhesive in powdery form to said transfer adhesive layer before the transfer adhesive has cured.

4,142,930

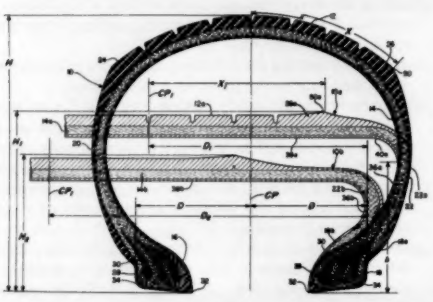
METHOD OF FABRICATING LARGE TIRES

Walter W. Curtiss, Jr., Brimfield, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 575,768, May 8, 1975, abandoned, which is a division of Ser. No. 323,166, Jan. 12, 1973, Pat. No. 3,900,061. This application Aug. 30, 1976, Ser. No. 719,012

Int. Cl.[2] B29H *5/02, 17/02*

U.S. Cl. 156—123 R **1 Claim**



1. A method of manufacturing a pneumatic tire having an overall inflated diameter not less than 200 inches, comprising:

(a) forming a generally cylindrical unvulcanized tire including a tread and pair of sidewalls terminating at a pair of bead portions, each of which bead portions has a plurality of inextensible bead cores, and carcass plies having substantially inextensible cords extending from bead to bead;

(b) toroidally expanding said cylindrical tire in a radial direction; and

(c) molding and vulcanizing said expanded tire in a configuration in which the section height of the tire is between 50 and 80 percent of the section height of said tire when mounted on a wheel rim and inflated, so that the length of said cords of said tire, when mounted and inflated will not increase in length more than 5 percent of the length of said cords of said tire when unmounted and uninflated, locating said bead portions during the curing thereof with an axial spacing equal to between 1.5 and 3 times the axial spacing of said bead portions when said tire is mounted on a rim and inflated, holding at least the radially inner 30 percent of said tire during the curing thereof in a configuration substantially the same as the corresponding portion of said tire when said tire is mounted on a rim, inflated, and unloaded.

4,142,931

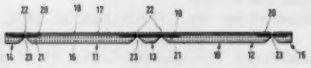
METHOD FOR MAKING FOLDING DOOR AND WALL PANEL SHELLS

Günter Viol, Oldenburg, and Werner Kohfeldt, Bloh, both of Fed. Rep. of Germany, assignors to Lignacord GmbH, Oldenburg, Fed. Rep. of Germany

Filed May 18, 1978, Ser. No. 907,223

Int. Cl.[2] B32B *31/00;* **E06B** *3/12*

U.S. Cl. 156—257 **11 Claims**



1. A method for the production of shells for folding doors and walls made of rigid panels interconnected by pliable hinge links and covered on the outside by a veneer cover having the same dimensions as the panels, characterized by: (a) detachably gluing a veneer cover (**17**) onto a board (**24**) which forms the basic panel bodies (**16**), (b) firmly gluing a cross grain oriented veneer (**18**) onto the reverse side of the veneer cover (**17**), (c) cutting grooves (**26**) in the area of hinge links (**19,20**) on the outside of the board (**24**), (d) cutting corresponding opposite grooves (**25**) in the cross grain oriented veneer (**18**), (e) cutting recesses (**21**) for the hinge lines (**19,20**) in the board (**24**), (f) removing the veneer cover-cross grain oriented veneer (**17,18**) as a unit, (g) reversing the board (**24**) and the veneer unit (**17,18**) 180°, (h) firmly bonding the board and veneer unit together with their respective grooves (**25,26**) aligned after inserting the hinge links (**19,20**) in their recesses, (i) cutting grooves (**22**) into the veneer cover (**17**) opposite the grooves (**25**), and (j) cutting V-shaped grooves (**23**) into the reverse side of the board (**24**) opposite the grooves (**26**).

4,142,932

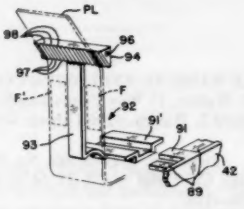
HAND-HELD LABELER

Paul H. Hamisch, Jr., Franklin, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Division of Ser. No. 790,519, Apr. 25, 1977, Pat. No. 4,116,747. This application Feb. 7, 1978, Ser. No. 875,720

Int. Cl.[2] B41K *1/00*

U.S. Cl. 156—384 **9 Claims**



1. Hand-held apparatus for printing and applying pressure sensitive labels comprising: a frame having a handle and means for carrying a label roll composed of labels releasably secured by pressure sensitive adhesive to a web of supporting material, a manually operable actuator disposed at the handle, a platen mounted by the frame, a print head cooperable with the platen, the print head having means for printing two spaced apart lines of data on the labels, means for delaminating printed labels

from the web, means disposed adjacent the delaminating means for applying printed labels, toothed means disposed downstream of the delaminator for advancing the web, means defining a path for the web of labels from the label roll to between the print head and the platen, around the delaminator and to the toothed means, hold-down means in overlying relationship to the platen but out of alignment with the lines of data for contacting the labels and for maintaining the web against the platen, and means responsive to operation of the actuator for moving the print head into printing cooperation with a label adjacent both sides of the hold-down means and for moving the toothed means to advance the web.

4,142,933

MANUFACTURE OF INSULATING PRODUCTS

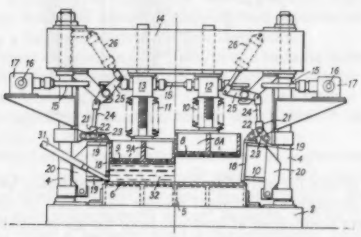
Robert Graham, Great Lumley, England, assignor to Newalls Insulation Co. Ltd., Manchester, England

Filed Dec. 14, 1976, Ser. No. 750,358

Claims priority, application United Kingdom, Dec. 30, 1975, 53221/75

Int. Cl.[2] D21J *3/00*; A47J *19/02*; B01D *25/32*

U.S. Cl. 162—396 **8 Claims**



1. A filter press for making sheet products from a liquid slurry comprising:

(i) a plurality of movable platen portions disposed end-to-end lengthwise of the press to form a single unitary surface

(ii) a filter material opposite said unitary surface

(iii) a plurality of individual screw jack actuating means, for each platen portion, adjustable relative to one another

(iv) a common drive shaft connected to all of said screw jack actuating means, for movement of all of the platen portions substantially simultaneously as a single platen

(v) sidewall means defining, with said plurality of platen portions and said filter material, a single mould cavity.

4,142,934

SPACER FOR SUPPORTING FUEL ELEMENT BOXES

Eugen Wild, Karlsruhe, Fed. Rep. of Germany, assignor to Gesellschaft für Kernforschung m.b.H., Karlsruhe, Fed. Rep. of Germany

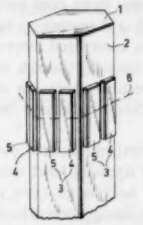
Filed Dec. 14, 1977, Ser. No. 860,469

Claims priority, application Fed. Rep. of Germany, Dec. 14, 1976, 2656441

Int. Cl.[2] G21C *3/02*

U.S. Cl. 176—78 **8 Claims**

1. In a spacer plate unit arranged externally on each side and at a predetermined level of a polygonal fuel element box for mutually supporting, with respect to one another, a plurality of the fuel element boxes forming a fuel element bundle, the improvement wherein each said spacer plate unit is formed of juxtapositioned first and second spacer plate parts each having the same length and the same width and being constituted of unlike first and second materials, respectively; said first and second spacer plate parts of the several spacer plate units situated at said level being arranged alternatingly when viewed in the peripheral direction of the fuel element box, whereby any two spacer plate units belonging to face-to-face oriented



sides of two adjoining fuel element boxes in the fuel element bundle define interfaces of unlike materials.

4,142,935

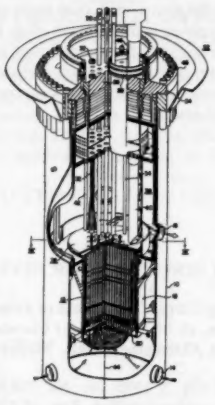
NUCLEAR REACTOR

Elman E. Wade, Ruffsdale, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 9, 1975, Ser. No. 566,479

Int. Cl.[2] G21C *19/00*

U.S. Cl. 176—87 **6 Claims**



1. A nuclear reactor comprising:

a cylindrical pressure vessel having a supporting structure positioned therein;

means for closing said pressure vessel comprising;

an outer ring secured to said pressure vessel, said outer ring having an opening therein, said outer ring being coaxial with said pressure vessel;

an annular rotatable large plug positioned in said outer ring opening, said large plug being rotatably coupled to said outer ring, said large plug being coaxial with said pressure vessel, said large plug having a diameter, said large plug having an opening therein; an annular rotatable small plug positioned in said large plug opening, said small plug being rotatably coupled to said large plug, said small plug being eccentric to said pressure vessel, said small plug having a diameter smaller than said large plug diameter;

a nuclear core positioned in said pressure vessel above said supporting structure in coaxial relationship therewith, said nuclear core including therein a plurality of fuel rod assemblies;

a plurality of springs positioned adjacent said supporting structure, each of said fuel rod assemblies having a spring coupled thereto,

a generally cylindrical core holddown structure positioned

atop said nuclear core, said core holddown structure covering said nuclear core, said core holddown structure comprising;

a generally cylindrical large core cover coaxial with said nuclear core and said pressure vessel, said core cover having a diameter associated therewith, said large core cover having an opening therein, said large core cover having a rigid vertical extension associated therewith, said large core cover extension being secured to said large plug; and

a generally cylindrical small core cover positioned in said large core cover opening, said small core cover being rotatable within said large core cover opening, said small core cover being eccentric to said nuclear core, said small core cover being coaxial with said small plug, said small core cover having a diameter substantially equal to one half of said large core cover diameter, said small core cover having a rigid vertical extension associated therewith, said small core cover extension being secured to said small plug, said small core cover having a radius associated therewith, said small core having an axis radially displaced from said large core cover axis a distance substantially equal to said small core cover radius;

said springs coupled to said fuel assemblies atop which said small core cover is positioned being of a size such that the combined upward axial force of said springs is substantially equal to the downward axial force of the weight of said small core cover and said small plug, said springs and said small core cover and said small plug capable of being in an equilibrium position in which said small plug will be axially stationary with said springs supporting said small core cover and said small plug.

4,142,936

CORE SUPPORT STRUCTURE FOR NUCLEAR POWER PLANTS

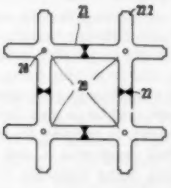
Eckhard Steinkamp; Jürgen Tautz, both of Erlangen, and Horst Ries, Bremgarten, all of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Filed Nov. 3, 1976, Ser. No. 738,527

Claims priority, application Fed. Rep. of Germany, Nov. 4, 1975, 2549423

Int. Cl.[2] G21C *13/02*

U.S. Cl. 176—87 **4 Claims**



1. Core support structure for nuclear power plants, comprising a grid of mutually crossing bridges and a support ring surrounding said grid and connected to ends of the outer bridges of said grid, said grid being formed of profile rod crosses having legs of given length, respective legs of pairs of adjacent crosses abutting one another endwise to form together a side of the smallest mesh opening of said grid, and weld means for securing said profile rod crosses to one another at the mutually abutting ends of the legs thereof.

4,142,937

DEVICE FOR PROVIDING A LEAK-TIGHT PENETRATION FOR ELECTRIC CABLES THROUGH A REACTOR VAULT ROOF

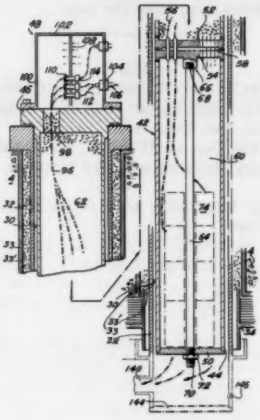
Max Eyral, Ste. Geneviére des Bois, and Armel Mahé, Palaiseau, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Jun. 17, 1977, Ser. No. 807,510

Claims priority, application France, Jun. 28, 1976, 76 19594

Int. Cl.[2] G21C *13/06*

U.S. Cl. 176—87 **8 Claims**



1. A device for providing a leak-tight penetration for electric cables through a horizontal reactor-vault roof of substantial thickness comprising at least one bore for accommodating the penetration device, wherein said device comprises:

a vertical tube which is open at the lower end and closed at the upper end by means of a flange-plate providing a leak-tight connection with the reactor vault roof, said flange-plate being provided with a bore through which said cables are intended to pass,

a removable closure hood mounted above said flange-plate,

at least one horizontal plate which is mounted inside the tube and the periphery of which is joined to said tube in leak-tight manner, said plate or plates being provided with orifices for the leak-tight passage of said cables,

at least one reel for the storage of said cables, that portion of said cables which is located beneath said horizontal plate or plates being wound onto said reel or reels, and

operable mechanical means constituted by a locking-bolt and rigidly fixed to said tube, said means being capable of taking up a locked position and an unlocked position in order to maintain said reels within said tube in the locked position and to release said reels from said tube in the unlocked position.

4,142,938

DETERMINATION OF TRIGLYCERIDES AND GLYCEROL

William S. Stavropoulos, Carmel, and Robert D. Crouch, Indianapolis, both of Ind., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 452,879, Mar. 20, 1974, Pat. No. 4,001,089. This application Oct. 8, 1976, Ser. No. 730,920

The portion of the term of this patent subsequent to Jan. 4, 1994, has been disclaimed.

Int. Cl.[2] C07G *7/02*; G01N *31/14*

U.S. Cl. 195—63 **9 Claims**

1. A reagent composition essentially free of hydrazine and useful for determining glycerol concentrations in biological fluids comprising from about 0.0009 to about 0.074 molar

proportions of magnesium ion source; from about 5 to about 30 parts by weight (gram basis) of adenosine-5-triphosphate; from about 20 to about 125 parts by weight (gram basis) of oxidized nicotinamide adenine dinucleotide; from about 0.5 to about 5 parts by weight (gram basis) of a colorless tetrazolium dye adapted to form a colored reaction product in an electron-carrier catalyzed reaction with reduced nicotinamide adenine dinucleotide; from about 1000 to about 10,000 parts (International Unit basis) of glycerol kinase; from about 5000 to about 280,000 parts (International Unit basis) of glycerol-1-phosphate dehydrogenase; and from about 1600 to about 10,000 parts (International Unit basis) of diaphorase.

4,142,939

METHOD OF PRODUCING AN R-TYPE BACTERIOCIN AND ITS USE IN THE DETECTION OF SPECIFIC MICROORGANISMS

Stephen A. Morse, and Barbara Iglewski, both of Portland, Oreg., assignors to Oregon State Board of Higher Education, An agency of the State of Oregon, Eugene, Oreg.

Filed Mar. 31, 1976, Ser. No. 672,292

Int. Cl.[2] C12D *13/06;* **G01N** *31/00;* **C12K** *1/04*

U.S. Cl. 195—96 **18 Claims**

1. The method of obtaining bacteriocin having bacteriacidal activity against *Neisseria gonorrhoeae* which comprises broth-culturing *Pseudomonas aeroginosa* ATCC 29260, removing supernatant from said culture, purifying said supernatant, and separating a bacteriocin-rich fraction therefrom.

4. A method of inhibiting the growth of a bacteria belonging to a specific genus which comprises the step of contacting said bacteria with an R-type bacteriocin recovered from a taxonomically unrelated genus of bacterium which binds to the first said bacteria.

7. A method of detecting the presence in a biological sample, of a bacteria belonging to a specific genus, which comprises the steps of combining said sample, a microbiological medium capable of supporting growth of said bacteria, and an R-type bacteriocin from a bacteria from a taxonomically unrelated genus of bacterium, which bacteriocin binds to the first said bacteria, incubating the resulting combination, and observing the growth or inhibition of growth of the first said bacteria in contact with said medium.

11. A method of detecting the presence in a biological sample of a bacteria belonging to a specific genus, which comprises the steps of combining said sample with a labeled R-type bacteriocin from a bacteria of a taxonomically unrelated genus of bacterium which bacteriocin binds to the first said bacteria, separating from the sample the labeled R-type bacteriocins which do not become bound to said bacteria to be detected in the sample, and measuring the amount of labeled bacteriocins either bound to said bacteria to be detected in the sample or separated from said sample in the previous step.

17. The method of identifying antigens which are common to bacteria of taxonomically unrelated genera, which comprises contacting an R-type bacteriocin with bacteria of a taxonomically unrelated genus, and detecting the interaction of said bacteriocin with the said taxonomically unrelated bacteria by measuring the degree of binding.

4,142,940

CULTIVATION CONTAINERS FOR CULTURES, MICROORGANISMS, CELLS, TISSUE AND THE LIKE

Manuel Modolell, Fürstetten; Paul G. Munder, Emmendingen, and Herbert Schaus, Hanau am Main, all of Fed. Rep. of Germany, assignors to W. C. Heraeus GmbH, Hanau, Fed. Rep. of Germany

Filed Sep. 7, 1976, Ser. No. 720,993

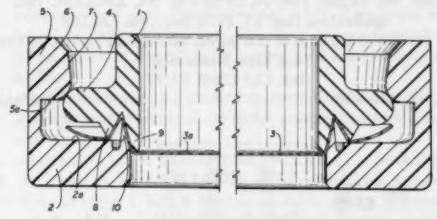
Claims priority, application Fed. Rep. of Germany, Sep. 13, 1975, 2541000

Int. Cl.[2] C12K *1/10*

U.S. Cl. 195—139 **10 Claims**

1. A cultivation container for cultures, microorganisms, cells, tissue, having a stretched, gas permeable, but impermeable to liquid membrane (3) forming the bottom thereof, and holding means to hold the membrane in position and in stretched and liquid tight condition comprising

two concentric plastic rings (1,2) fitted in each other and having matching fitting surfaces (9,10) and interengaging and interlocking recess-projection locking means (4,5), the



edge portion of the plastic membrane (3) being clamped between the adjacent matching fitting surfaces (9,10) in self-holding relation to lock and pinch the membrane in position between said matching, fitting surfaces when the rings are locked to each other and interlocking by engagement of the recess-projection locking means (4,5).

4,142,941

METHOD FOR PRODUCING BLAST FURNACE COKE

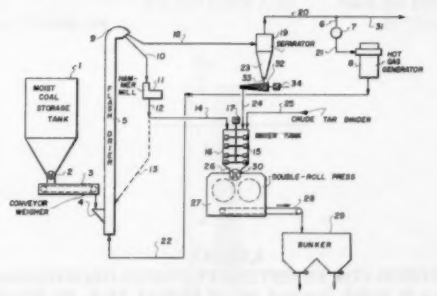
Heinrich Weber, Recklinghausen; Horst Dungs, Herne; Klaus Urbye, Flaesheim; Franz Beckmann, Alsdorf; Hugo Schmauch, Merchweiler, Saar, and Karl H. Flasche, Bons, Saar, all of Fed. Rep. of Germany, assignors to Firma Carl Still Recklinghausen, Fed. Rep. of Germany

Filed Sep. 12, 1977, Ser. No. 832,365

Claims priority, application Fed. Rep. of Germany, Sep. 10, 1976, 2640787

Int. Cl.[2] C10B *45/02, 53/08;* **C10L** *5/16*

U.S. Cl. 201—6 **8 Claims**



1. A method of producing blast furnace coke from bituminous coals, particularly coals having poor coking capacities, comprising mixing fine coals or fine coal mixtures which have a swelling index smaller than 7 (according to DIN 51741) and which comprise more than 50% of poorly or non-baking coal having a content of volatile matter in excess of 30% or less than 20%, grinding the coals or coal mixtures to attain a surface per unit mass of from 400 cm^2 to 1200 cm^2 per gram (according to DIN 66145), mixing the ground coals with from 3% to 8% by weight of a hydrous or anhydrous crude tar binder to form a coal and binder mixture, compressing the coal and organic binder mixture to form it into briquettes at a temperature range of from 70° C. to below 100° C., and charging the briquets into oven chambers, without substantial intermediate cooling, so as to carbonize the coal into blast furnace coke.

4,142,942

METHOD AND APPARATUS FOR QUENCHING COKE

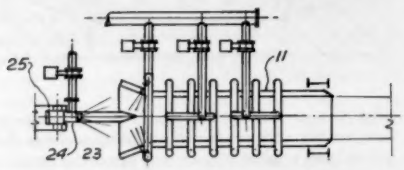
Albert Calderon, 1065 Melrose Dr., Bowling Green, Ohio 43402

Continuation-in-part of Ser. No. 479,461, Jun. 14, 1974, Pat. No. 3,972,780, which is a continuation-in-part of Ser. No. 454,169, Mar. 25, 1974, abandoned, which is a continuation of Ser. No. 283,427, Aug. 24, 1972, abandoned, which is a continuation of Ser. No. 14,268, Feb. 26, 1970, Pat. No. 3,645,854. This application Sep. 17, 1976, Ser. No. 724,162

The portion of the term of this patent subsequent to Aug. 3, 1993, has been disclaimed.

Int. Cl.[2] C10B *97/12*

U.S. Cl. 201—39 4 Claims



1. A method of abating smoke during the pushing of coke from the discharge opening of a coke oven, said method including the steps of aligning the inlet portion of a coke guide with the discharge opening of the coke oven and aligning the outlet portion of the guide with a means for receiving and supporting a body of coke whch is pushed through the outlet portion of the guide, pushing a body of coke out of the discharge opening of the coke oven and through the outlet portion of the guide with the coke thereafter moving toward the receiving means, directing liquid at coke exiting the guide and moving along a path toward the receiving means for dropping the temperature of the coke, moving a member through at least a portion of the path of movement of the body of coke between the outlet portion of the guide and the receiving means for dispersing portions of the coke exposing substantial areas of coke to the fluid being directed thereat, and confining at least a portion of the gases generated by the directing of fluid toward the coke.

4,142,943

METHOD FOR PURIFYING PENTACHLOROPHENOL

Erwin H. Kobel, deceased, late of Midland, Mich. (by Elfreda Kobel, administratrix), and Masao Yoshimine, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sep. 23, 1974, Ser. No. 508,367

Int. Cl.[2] B01D *3/34;* C07C *37/22, 39/24*

U.S. Cl. 203—6 10 Claims

1. In a process for purifying pentachlorophenol by distilling the pentachlorophenol at from about 190° C. to about 270° C. under subatmospheric pressure the improvement which consists of conducting the distillation in the presence of about 0.1 to about 10 weight percent, based upon the weight of the crude pentachlorophenol, of a hydroxyl containing compound selected from the group consisting of sugars, polyhydric alcohols, ethers of polyglycols and polyglycols, wherein said hydroxyl containing compound is present in a 0 to about 90 percent aqueous solution.

4,142,944

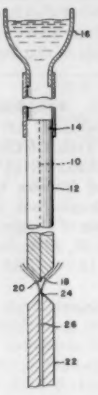
APPARATUS AND METHODS FOR EFFLUENT STREAM ANALYSIS

John L. Smith, Mercerville, N.J., assignor to Princeton Applied Research Corporation, Princeton, N.J.

Filed Jan. 26, 1978, Ser. No. 872,505

Int. Cl.[2] G01N *27/34*

U.S. Cl. 204—1 T 9 Claims



4. An apparatus for effluent stream analysis comprising:

a mercury drop electrode for forming mercury drops symmetrical about a vertical axis and including a capillary passage having a first end available to receive mercury and a second end at which said mercury drops are formed, said second end being tapered; and

an effluent delivery means for directing an effluent from below the drops for flow in a vertically upward direction coaxial to said vertical axis to provide turbulent free flow of effluent about the drops.

6. A method of analyzing an effluent stream utilizing a mercury drop electrode comprising the steps of

forming at the end of a capillary passage a mercury drop symmetrical about a vertical axis;

directing an effluent from below the drop in a vertically upward direction coaxial to the vertical axis to provide turbulent free flow of effluent about the mercury drop.

4,142,945

METHOD OF FORMING A COMPOSITE BODY AND METHOD OF BONDING

Bruce S. Dunn, Schenectady, and Robert R. Dubin, Ballston Lake, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 22, 1977, Ser. No. 808,813

Int. Cl.[2] B23K *28/00;* C25D *11/00*

U.S. Cl. 204—16 4 Claims

1. A method of forming a composite body which comprises providing a solid ion-conductive electrolyte material element with opposite major surfaces and an edge surface, positioning a moderately deformable metallic element against at least a portion of one major surface and against an associated portion of the edge surface, the electrolyte material element containing mobile ions of a metal different from the metallic element, applying an electric potential across the elements to pass a finite current of low amperage through the elements the convert a surface portion of the ion-conductive electrolyte material element adjacent the metallic element to an ion-insulating material and to effect bonding between the surfaces of the electrolyte material element and the metallic element.

4,142,946

METHOD OF BONDING A METALLIC ELEMENT TO A SOLID ION-CONDUCTIVE ELECTROLYTE MATERIAL ELEMENT

Bruce S. Dunn, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jun. 17, 1977, Ser. No. 807,407
Int. Cl.[2] B23K *28/00*; C25D *11/00*
U.S. Cl. 204—16 7 Claims

1. A method of bonding at least one moderately deformable metallic element to a solid ion-conductive electrolyte material element containing mobile ions of a metal different from the metallic element which comprises juxtaposing the major surfaces of the elements in close surface contact relationship, applying an electric potential across the juxtaposed elements to pass a finite current of low amperage through the juxtaposed elements to convert a surface portion of the ion-conductive electrolyte material element adjacent the metallic element to an ion-insulating material and to effect bonding between the juxtaposed surfaces.

4,142,947

ELECTRODEPOSITION OF POLYCRYSTALLINE SILICON FROM A MOLTEN FLUORIDE BATH AND PRODUCT

Uri Cohen, 1165 Road 22, Apt. 47, North Plainfield, N.J. 07060

Filed May 12, 1977, Ser. No. 796,231
Int. Cl.[2] C25D *3/66, 9/08*; B32B *15/04*
U.S. Cl. 204—39 19 Claims

1. A method for electrodepositing a polycrystalline silicon onto a substrate comprising the cathode of an electrolytic cell, comprising the steps of

(a) forming a molten fluoride electrolytic salt bath for said electrolytic cell including a source of silicon and a solvent,

(b) removing essentially all oxides from the electrolytic bath by the following steps:

(1.) applying a vacuum to the bath,

(2.) supplying in the bath a source of reagent chemically reactive with oxide ions in sufficient quantity to react with any oxide ion in the bath,

(3.) reacting said oxygen reactive reagent with oxygen in the bath at a molten bath temperature, and

(4.) removing the reaction product from the bath,

said cathode including an electrodeposition substrate formed of a metal which is essentially non-alloying with silicon under the conditions of electrodeposition,

(c) passing a current between an anode in said bath and said cathode at sufficient current density to electrodeposit silicon as a continuous, coherent, firmly-retained, non-spongy, polycrystalline layer of non-alloyed silicon onto said substrate,

(d) maintaining said bath in an essentially oxygen-free environment and at a temperature for said bath to be in a totally molten state.

17. A body comprising a substrate of a metal essentially unalloyed with silicon, and non-alloyed silicon electrodeposited on said substrate in the form of a continuous, coherent, firmly-retained, non-spongy polycrystalline layer with an average grain diameter in excess of 20 microns.

4,142,948

CHROMIUM DEPOSITION SOLUTION

Sakae Tajima, Tokyo; Takashi Mouri, Kanagawa, and Shigeyoshi Morisaki, Yokohama, all of Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Japan

Filed Feb. 27, 1978, Ser. No. 881,845
Claims priority, application Japan, Feb. 28, 1977, 52-20252
Int. Cl.[2] C25D *3/06, 3/56*
U.S. Cl. 204—43 R 5 Claims

1. An aqueous acidic chromium electrodeposition solution which contains, in dissolved form:

a. a trivalent chromium salt in a molar concentration of from 0.1 to saturation expressed in terms of the molar concentration of trivalent chromium;

b. at least one compound selected from the group consisting of unsubstituted aliphatic carboxylic acids, amino-substituted aliphatic carboxylic acids, hydroxy-substituted aliphatic carboxylic acids and salts thereof, said compound having 1 to 5 carbon atoms in the molecule, in a concentration such that the molar ratio of the total carboxyl or carboxylate groups to the total trivalent chromium atoms in the salt (a) is within the range of from 0.5 to 5.0;

c. an aluminum salt in a molar concentration of from 0.1 to 2.0 expressed in terms of the molar concentration of aluminum, and;

d. ammonium ion in a molar concentration of at least 0.2.

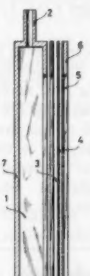
5. An aqueous acidic chromium electrodeposition solution according to claim 1, which further contains at least one metal selected from the group consisting of iron, nickel, cobalt, molybdenum, tungsten, manganese, rhodium, tin, zinc and cadmium.

4,142,949

PROCESS FOR PRODUCING AN ELECTRODE FOR USE IN THE ELECTROLYTIC GENERATION OF HYDROGEN PEROXIDE

Wolfgang Faul, Jülich, and Bertel Kastening, Hamburg, both of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich GmbH, Jülich, Fed. Rep. of Germany

Filed Feb. 16, 1977, Ser. No. 769,190
Claims priority, application Fed. Rep. of Germany, Feb. 25, 1976, 2607510
The portion of the term of this patent subsequent to Jul. 6, 1993, has been disclaimed.
Int. Cl.[2] C25B *1/30*
U.S. Cl. 204—84 10 Claims



1. A process for making an electrode capable of cathodically generating hydrogen peroxide, which comprises the steps of:

incandescently heating an active-carbon powder at a temperature above 900° C. in a hydrogen atmosphere for a period of at least 30 minutes thereby modifying the surface characteristics of the active-carbon powder;

cooling the incandescently heated active-carbon powder in a hydrogen atmosphere;

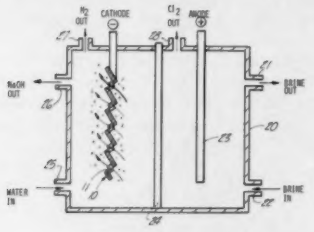
mixing the cooled active-carbon powder with a binder and a hydrophobic substance to form an active mass; and

applying said active mass to a conductive support.

4,142,950
APPARATUS AND PROCESS FOR ELECTROLYSIS USING A CATION-PERMSELECTIVE MEMBRANE AND TURBULENCE INDUCING MEANS

Edward D. Creamer, Volingbrook, Michael Krumpelt, Naperville, both of Ill. and Jacob Jorne, Birmingham, Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Nov. 10, 1977, Ser. No. 850,344
Int. Cl.[2] C25B 1/46, 11/03, 13/08, 9/00
U.S. Cl. 204—96 16 Claims



1. An electrode and cation-permselective membrane combination capable of providing high current efficiency in an electrolytic cell comprising a cathode and an anode and catholyte and anolyte compartments divided by said permselective membrane wherein said cathode is a gas-directing expanded metal cathode having an open mesh network of interconnected webs, a portion of said webs being positioned at an angle to the plane of said cathode and adapted to induce turbulence in the catholyte of said electrolytic cell by directing gases evolved on said cathode toward or away from the surface of said permselective membrane.

4,142,951
BRINE ELECTROLYSIS USING BONDED ASBESTOS DIAPHRAGMS

Richard N. Beaver, and Charles W. Becker, both of Angleton, Tex., assignors to The Dow Chemical Company, Mich.

Continuation-in-part of Ser. No. 640,119, Dec. 12, 1975, Pat. No. 4,093,533. This application Dec. 20, 1977, Ser. No. 862,458
Int. Cl.[2] C25B 1/46, 13/06, 13/08
U.S. Cl. 204—98 7 Claims

1. In a process for electrolyzing brine in chlor-alkali diaphragm cells employing graphite anodes, the improvement comprising operating at a low anolyte pH of less than 1.5 thereby extending the operating life of the graphite anodes, said operation at a low ph of less than 1.5 being made operationally feasible by employing as the diaphragm material a vacuum-drawn polymeric fluorocarbon-bonded mixture of crocidolite/chrysotile asbestos fibers, said crocidolite/-chrysotile being in a weight ratio range of about 33/67 to about 80/20.

4,142,952
COPPER EXTRACTION WITH SALICYLALDOXIME-P-NONYLPHENOL MIXTURES

Raymond F. Dalton, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Jan. 3, 1977, Ser. No. 756,067
Claims priority, application United Kingdom, Jan. 30, 1976, 3788/76; United Kingdom, Jun. 15, 1976, 24722/76; Oct. 21, 1976, 43711/76
Int. Cl.[2] C25C 1/12
U.S. Cl. 204—106 11 Claims

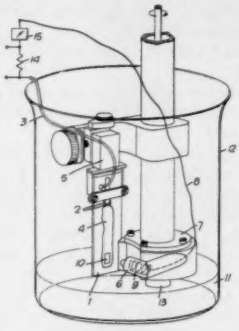
1. A process for extracting copper values from aqueous solutions of copper salts which comprises the steps of (a) contacting the aqueous solution with a solution in a water-immiscible organic solvent of (1) o-hydroxyaryloximes selected from the group consisting of a mixture of 5-nonylsalicylaldoximes and a mixture of 5-heptylsalicylaldoximes and (2) a mixture of p-nonylphenols, (b) separating from the aqueous phase the solvent phase containing copper in the form of a complex with the indicated oxime mixture, (c) contacting the solvent phase with an aqueous mineral acid, and (d) separating the solvent phase from the aqueous phase containing copper in the form of a salt with the mineral acid, the amount of (2) in said solvent being in the range of 0.1 to 20 times the weight of (1) and such that with the other conditions used, the overall copper recovery resulting from steps (a)–(d) is greater than when (2) is not included, the pH during the contacting step (a) being such that the complex which is formed is stable.

11. A process as claimed in claim 1 in which the final separated aqueous phase is electrolysed to recover copper therefrom and recycled for use as the aqueous mineral acid in step (c).

4,142,953
SEMICONDUCTOR ETCHING

David F. Lovelace, Waltham Abbey, England, assignor to ITT Industries, Inc., New York, N.Y.

Filed Mar. 30, 1978, Ser. No. 891,885
Claims priority, application United Kingdom, Apr. 1, 1977 13958/77
Int. Cl.[2] C25F 3/12, 3/14
U.S. Cl. 204—129.3 7 Claims



1. A method of electrochemical self-limiting etching of a workpiece of semiconductive material consisting of gallium arsenide and/or one or more of its solid solutions with other elements selected from Groups III and V of the Periodic Table, which workpiece contains an exposed region of p-type material backed by n-type material, wherein the workpiece is made one electrode of an electrochemical cell whose other electrode is made of platinum and whose electrolyte is provided by an aqueous solution of tri-ethanolamine, and wherein during the etching the workpiece its surface is protected from exposure to radiation of short enough wavelength to give rise to the generation thereat of photon-excited electron-hole pairs.

4,142,954
ELECTROLYTIC CLEANING OF A SHROUDED BLADE ASSEMBLY

Joseph G. Lucas, Trumbull, Conn., assignor to Avco Corporation, Stratford, Conn.

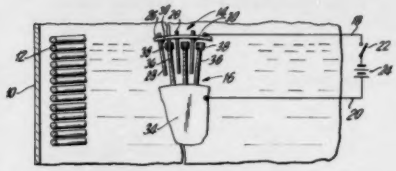
Filed Apr. 14, 1978, Ser. No. 896,558
Int. Cl.[2] C25F 5/00, 7/00
U.S. Cl. 204—146 4 Claims

1. A method for removing excess brazing material from the smooth airfoil contour of a plurality of vanes joined by brazing to and arranged about a ring, said method comprising the steps of:

placing a disc within the area of the vanes to be spaced inwardly therefrom;

inserting electrically conductive extensions from the disc to fit between successive vanes without contacting the vanes or vane ring electrically;

connecting electrical energy to the disc and vanes;
creating a current flow from the vanes to the extensions by



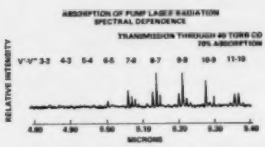
immersing them in a silver alloy solutionizing electrolyte to remove bulk and irregular geometry of braze buildup at the vane to ring joints and surfaces.

4,142,955

METHOD FOR THE INITIATION OF CHEMICAL REACTIONS BY LOW PRESSURE OPTICAL PUMPING

Joseph W. Rich, East Aurora; Richard C. Bergman, Corfu, and Charles E. Treanor, Williamsville, all of N.Y., assignors to Calspan Corporation, Buffalo, N.Y.

Filed Sep. 14, 1977, Ser. No. 833,323
Int. Cl.[2] B01J *1/10*
U.S. Cl. 204—157.1 R **5 Claims**



1. A method for initiating chemical reactions in a mixture of flowing gases by low pressure optical pumping including the steps of:

supplying a mixture of gases, including at least one species capable of resonant absorption of pump radiation, to an absorption cell;

flowing the mixture of gases through the absorption cell; and

irradiating the mixture of gases in the absorption cell with radiation from a pump laser having a lasant species which produces radiation capable of resonant absorption by said at least one species whereby said at least one species in the absorption cell absorbs pump laser radiation in the lower vibrational states of said at least one species and by vibration-to-vibration pumping populates the upper vibrational states of said at least one species.

4,142,956

PROCESS FOR PRODUCING AN OPEN CELL FOAM

Yasuo Shikinami, Kusatsu; Kosuke Iida, Osaka; Kunihiro Hata, Osaka, and Fumio Kasajima, Osaka, all of Japan, assignors to Takiron Co., Ltd., Osaka, Japan

Filed Jun. 21, 1977, Ser. No. 808,578
Claims priority, application Japan, Jul. 21, 1976, 51-87553
Int. Cl.[2] B01J *1/10, 1/12*
U.S. Cl. 204—159.14 **10 Claims**

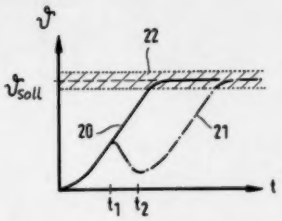
1. A process for producing an open cell foam, wherein the open cell ratio ranges from about 50% to about 98% of the total void volume, which comprises irradiating a thermoplastic resin polymer blend composition comprising (a) a thermoplastic resin polymer blend including 1,2-polybutadiene, wherein the thermoplastic resin polymer responds with difficulty to an ultraviolet wave length of about 254 to about 400 mμ, the 1,2-polybutadiene being present in an amount of about 10 to about 90% by weight to the total weight of 1,2-polybutadiene and blended thermoplastic resin polymer, the 1,2-polybutadiene having not less than about 70 mol% 1,2-bonds, a molecular weight of not less than about 50,000, a degree of crystallinity of about 10 to about 50%, and a syndiotactic stereospecificity of 20% or higher, (b) a photosensitizing agent and (c) a thermally decomposable foaming agent with ultraviolet light of a wavelength of about 254 to about 400 mμ to cross-link the 1,2-polybutadiene, and subsequently foaming the composition at a temperature higher than the softening point of the 1,2-polybutadiene and that of the thermoplastic resin polymer blended therewith and higher than the decomposition temperature of the foaming agent.

4,142,957

METHOD AND ARRANGEMENT FOR HEATING WORKPIECES TO DESIRED TEMPERATURES

Werner Oppel, Cologne, Fed. Rep. of Germany, assignor to Klöckner Ionon GmbH, Cologne, Fed. Rep. of Germany

Division of Ser. No. 769,162, Feb. 16, 1977. This application Oct. 19, 1977, Ser. No. 843,783
Claims priority, application Fed. Rep. of Germany, Feb. 18, 1976, 2606396
Int. Cl.[2] B01K *1/00*
U.S. Cl. 204—164 **3 Claims**



1. A method for the automatic heating and uniform readjustment of a temperature raise to a specified treatment temperature of a workpiece treated by means of current-intensive glow discharge in a container, comprising the steps of measuring the actual temperature of the workpiece in the container; forming a time derivative of the measured actual temperature value; comparing the time derivative value with the specified treatment temperature value to produce a comparison value; and readjusting the glow discharge current corresponding to said comparison value.

4,142,958

METHOD FOR FABRICATING MULTI-LAYER OPTICAL FILMS

David T. Wei, Malibu, and Anthony W. Louderback, Ojai, both of Calif., assignors to Litton Systems, Inc., Woodland Hills, Calif.

Filed Apr. 13, 1978, Ser. No. 896,133
Int. Cl.[2] C23C *15/00*
U.S. Cl. 204—192 P **9 Claims**

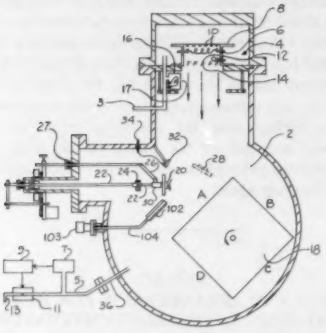
1. A method of fabricating multiple layer optical films comprising:

bombarding targets obliquely with an ion beam in a vacuum chamber to sputter deposit a plurality of optical film layers on a base;

controlling the atmosphere inside of the vacuum chamber to provide sufficient gas to sustain the ion beam and the proper amount of oxygen to accomplish proper stoichiometry of the thin films; and

depositing multiple layers of different materials on said base

by varying the targets being bombarded by the ion beam; and



continuously rotating said base during the deposition of said multiple optical layers.

4,142,959

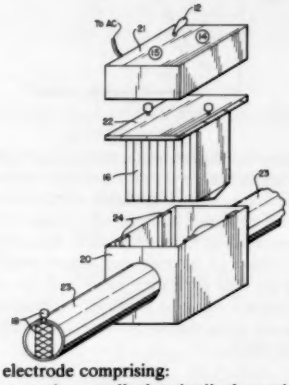
ELECTRODE ASSEMBLY

John McCallum, Worthington, Ohio, assignor to Electro-Chlor Corporation, Worthington, Ohio

Continuation-in-part of Ser. No. 525,882, Nov. 21, 1974, Pat. No. 4,085,028. This application Jan. 24, 1978, Ser. No. 871,926

Int. Cl.[2] C25B *1/16, 1/26;* **C02B** *1/82*

U.S. Cl. 204—286 **10 Claims**



1. A bipolar electrode comprising:

(a) first and second generally longitudinal members, each made of an electronically nonconductive material and each having a longitudinal groove therein adapted to receive and retain the edge of a sheet of material inserted therein;

(b) an essentially flat rectangular sheet of titanium, having a top edge and a bottom edge, and having a coating of platinum metal or other conductive coating deposited on the opposing faces thereof the top edge of said sheet being retained in the longitudinal groove of said first member intermediate to the ends thereof and the bottom edge of said sheet; and

(c) a pair of essentially flat rectangular sheets of an electrically nonconductive material of substantially the same thickness as said flat sheet of platinum- or conductive-coated-titanium, each having a top edge and a bottom edge, one sheet positioned on each end of, coplanearly with, and contiguous with said said sheet of titanium, each with its top edge retained in the longitudinal groove in said first member and its bottom edge retained in in the groove in said second member.

4,142,960

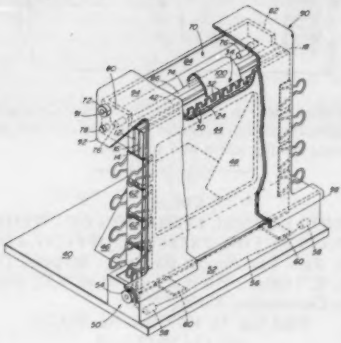
SLAB GEL MOLD AND ELECTROPHORESIS APPARATUS

Terrance Hahn, 18 Arlington St., Reading, Mass. 01867, and Allan M. Maxam, 3½ Wendell St., Cambridge, Mass. 02138

Filed Sep. 1, 1977, Ser. No. 829,802

Int. Cl.[2] G01N *27/26, 27/28*

U.S. Cl. 204—299 R **12 Claims**



1. An electrophoresis apparatus which comprises:

a first integral upper electrolytic chamber;

a lower electrolytic chamber;

a vertical wall secured to the chambers to maintain the chambers in spaced apart relationship;

a mold assembly comprising first and second plates in spaced apart relationship defining a mold cavity therebetween, the cavity adapted to receive a gel, the lower end of the mold assembly disposed in the lower electrolyte chamber, the gel when disposed in the cavity in electrical communication with the electrolyte in the chamber, and the gel when disposed in the cavity forming at the upper end of the mold assembly a plurality of projections, the projections defining a plurality of slots into which samples to be separated electrophoretically may be placed, the upper edges of the projections recessed below the upper edge of the mold assembly,

the inner surfaces of the upper end of the mold assembly defining a second integral upper electrolytic chamber, the mold assembly secured to the vertical wall such that the first and second chambers are spatially separated in non-sealing relationship said second chamber being spaced apart and distinct from the first chamber;

means to provide both electrical communication; and liquid-to-liquid communication between electrolyte disposed in the first and second upper electrolytic chambers; and

means to generate a current in the chambers whereby a sample introduced into the slots defined by the projections can be electrophoretically separated.

4,142,961

HYDROPROCESSED SHALE OIL INCLUDING THERMALLY TREATING AND COKING STEPS

Harbo P. Jensen, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Dec. 29, 1977, Ser. No. 865,637

Int. Cl.[2] C10G *25/00, 23/00*

U.S. Cl. 208—91 **10 Claims**

1. A method for producing a hydroprocessed shale oil product from a shale oil feedstock contaminated with more than 8 ppm arsenic in the form of at least one soluble arsenic compound and having an initial pour point in excess of 40° F. (4.4° C.), which method comprises:

(a) forming an arsenic-containing precipitate in an aged shale oil having a pour point at least 10° F. (5.6° C.) lower than said initial pour point by thermally treating said feedstock

at a temperature of 600° to 800° F. (316° to 427° C.) for 1 to 300 minutes at a pressure sufficient to maintain said oil substantially in a liquid phase;

(b) transporting said aged shale oil of reduced pour point by means of truck, railroad tank car or pipeline;

(c) producing coke and a normally liquid hydrocarbon distillate by coking at least a portion of said aged and transported shale oil; and

(d) producing said shale oil product containing not more than 4 ppm arsenic and a lower contaminant content selected from the group consisting of sulfur, nitrogen and iron by catalytically reacting at least a portion of said distillate from step (c) at an elevated temperature in the presence of hydrogen and a catalyst.

4,142,962

HYDROGENATION AND HYDROCRACKING WITH HIGHLY DISPERSED SUPPORTED NICKEL CATALYSTS

David J. C. Yates, West Millington, and Lawrence L. Murrell, Elizabeth, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 688,154, May 20, 1976, Pat. No. 4,073,750. This application Feb. 13, 1978, Ser. No. 877,505

Int. Cl.[2] C10G *13/02;* C07C *5/10;* B01J *27/04, 35/10*

U.S. Cl. 208—109 **18 Claims**

1. In catalytic hydrogenation wherein the feedstream to be processed is contacted with a catalyst under hydrogenation reaction conditions, the improvement comprising using as the catalyst, a highly dispersed nickel catalyst having a nickel surface area of from 200 to 400 m^2/gram prepared by the method which comprises slurrying a nickel metal precursor dissolved in a nonaqueous organic liquid solvent with a high surface area refractory oxide support, removing the solvent to obtain a composite of said nickel metal precursor and said support, and activating said composite by reducing in hydrogen or hydrogen diluted with an inert gas at conditions sufficient to convert substantially all of the nickel metal precursor to nickel metal.

4,142,963

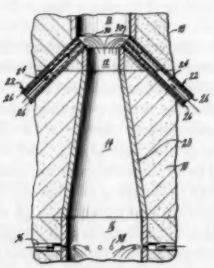
PENETRATION ENHANCED FLUID MIXING METHOD FOR THERMAL HYDROCARBON CRACKING

James D. Kearns, Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.

Filed Jun. 7, 1977, Ser. No. 804,224

Int. Cl.[2] C10G *9/36*

U.S. Cl. 208—129 **12 Claims**



1. In the thermal cracking of hydrocarbons by the introduction of liquid petroleum feedstock into a stream of hot gaseous combustion products formed by the combustion of fluid fuel and oxidant in the presence of steam, in apparatus having a combustion/mixing zone and a reaction zone downstream therefrom, the method comprising introducing and mixing said liquid as at least one stream countercurrently into said hot gaseous combustion product stream while concurrently surrounding and shrouding each of said liquid streams with a co-injected annular stream of gas having a velocity sufficient to supplement momentum and a temperature not substantially below that of said liquid stream, thereby enhancing penetration of and mixing with said hot combustion product stream.

4,142,964

PROCESS FOR TREATING A SOUR PETROLEUM DISTILLATE

David H. J. Carlson, Park Ridge, and James R. Deering, Prospect Heights, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 820,472, Aug. 1, 1977, Pat. No. 4,100,057. This application Jun. 1, 1978, Ser. No. 911,604

Int. Cl.[2] C10G *27/06*

U.S. Cl. 208—206 **11 Claims**

1. A process for treating a mercaptan-containing sour petroleum distillate which comprises contacting said distillate with a supported metal phthalocyanine catalyst in the presence of an alkaline reagent at oxidation conditions, said catalyst having been prepared by impregnating said phthalocyanine on a solid adsorptive support from an aqueous impregnating solution or dispersion of said metal phthalocyanine containing from about 5 to about 50 wt. ppm. morpholine.

4,142,965

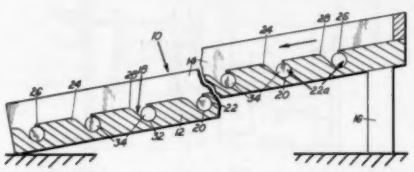
SLUICE BOX

Adelbert H. Dolan, 1535 S.E. Lafayette, Albany, Oreg. 97321

Continuation of Ser. No. 733,955, Oct. 19, 1976, abandoned. This application Apr. 13, 1978, Ser. No. 896,214

Int. Cl.[2] B07B *11/08*

U.S. Cl. 209—487 **1 Claim**



1. A sluice box comprising

(a) a bottom wall having an upper surface and opposite ends comprising a feed end and a discharge end,

(b) upright side walls on said bottom wall forming a chute with said bottom wall down which ore containing solution fed into said feed end may flow upon inclined support of the sluice box,

(c) means defining a plurality of cross grooves in said bottom wall each having a pointed feed edge and a rounded discharge edge downstream from the feed edge,

(d) each of said grooves having a bottom wall portion, a front wall portion leading from said bottom wall portion to said feed edge, and a rear wall portion leading from said bottom wall portion to said discharge edge,

(e) said bottom wall portion and said front wall portion being formed on substantially the same circular radius of curvature and the front wall portion forming an undercut under the feed edge,

(f) said rear wall portion being inclined downwardly and forwardly in a straight line and leading from said rounded discharge edge into a continuous uninterrupted plane with said curved bottom portion,

(g) the diameter of said grooves at said bottom and front wall portions being approximately equal to the distance between said feed edge and said discharge edge,

(h) and cleanout means extending through one of said side walls at said grooves for removing particles deposited in said grooves.

4,142,966

MEMBRANE SEPARATION OF WATER FROM AQUEOUS MIXTURES

Eli Perry, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Apr. 1, 1974, Ser. No. 456,719
Int. Cl.[2] B01D *13/00*
U.S. Cl. 210—22 R 1 Claim

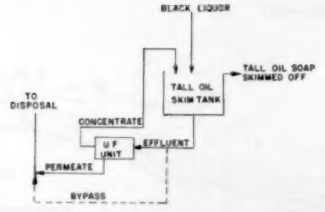
1. A process for the liquid to liquid, one phase separation of water from aqueous mixtures, comprising: (a) contacting an aqueous mixture with the first surface of an organic polymeric membrane selectively permeable to water; (b) permeating a portion of the water from the aqueous mixture into and through the membrane; (c) contacting a second and opposite surface of the membrane with a water-miscible sweep liquid comprised of phenol; (d) withdrawing a water-enriched, miscible phase from the second membrane surface; (e) thermally adjusting the water-enriched miscible phase to a temperature beyond the water miscibility temperature of the phenol; and (f) forming two liquid phases comprised of the water rich phase and the phenol rich phase.

4,142,967

PROCESS FOR ENHANCING RECOVERY OF TALL OIL SOAP FROM BLACK LIQUOR

Henry A. Fremont, Hamilton, Ohio, assignor to Champion International Corporation, Stamford, Conn.

Filed Sep. 15, 1975, Ser. No. 613,477
Int. Cl.[2] B01D *13/00*
U.S. Cl. 210—23 F 4 Claims



1. A process for enhancing the recovery of tall oil soap from black liquor which comprises skimming the tall oil soap from the black liquor in a first zone, subjecting the remaining black liquor phase to ultrafiltration in a second zone to concentrate the residual tall oil soap, recycling the concentrate to the first zone and allowing the tall oil soap to agglomerate, and skimming off the agglomerated soap in said first zone.

4,142,968

DIATOMACEOUS EARTH FILTERAID AND METHOD FOR ITS MANUFACTURE

Richard B. Nielsen, Irvine, and Charles J. Vogelsang, Cerritos, both of Calif., assignors to Grefco, Inc., Los Angeles, Calif.

Filed Nov. 9, 1977, Ser. No. 849,873
Int. Cl.[2] B01D *15/06*
U.S. Cl. 210—32 24 Claims

1. A process for producing diatomaceous earth filteraids of reduced beer-soluble iron content comprising the steps of mixing diatomaceous earth filteraids having a beer-soluble iron content of less than about .01% with an amount of aqueous acid solution, said acid being present in an amount less than about 15% by weight, based on the weight of dry filteraid, said acid being one which is capable of reducing said beer-soluble iron content within seven days when applied as a 3.0 normal aqueous solution to a diatomaceous earth filteraid in an amount of 15% by weight based on the weight of the dry filteraid; and maintaining the acid solution in contact with the teraids for a period of time sufficient to reduce the beer-soluble iron content of said filteraid by at least about 60%.

4,142,969

COMPOSITION AND PROCESS FOR SELECTIVELY REMOVING OLEAGINOUS PRODUCTS FROM WATER

Richard S. Funk, 2785 St. James Pl., Altadena, Calif. 91001; Donald W. Mogg, 407 Avenue G, Redondo Beach, Calif. 91001, and David L. Ruff, 2304 W. 233rd St., Torrance, Calif. 90501

Continuation-in-part of Ser. No. 144,257, May 17, 1971, abandoned. This application Mar. 12, 1975, Ser. No. 557,688
Int. Cl.[2] C02B *9/02*
U.S. Cl. 210—36 2 Claims

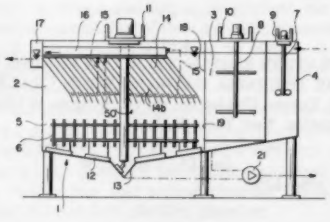
2. A method for sorbing oleaginous compounds comprising applying to the area where said oleaginous compounds are to be sorbed, an oleospecific hydrophobic composition comprising an intimate mixture of expanded volcanic glass consisting of perlite, and a cellulosic fiber wherein said glass is present in an amount by weight of about 73.9% and has a particle size in the range of −8 to +400 mesh in which a major portion thereof passes through a 14 mesh screen and is retained on a 200 mesh screen and in which said fiber is present in an amount by weight of about 19.9% in which no more than about 35% of said fiber is −200 mesh, and about 6.2 weight percent of asphalt as a sizing binder.

4,142,970

METHOD AND APPARATUS FOR MECHANICALLY AND CHEMICALLY TREATING LIQUIDS

Günter von Hagel, Aarbergen, and Norbert Berlenbach, Wiesbaden-Dotzheim, both of Fed. Rep. of Germany, assignors to Passavant-Werke, Hutte, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 296,775, Oct. 12, 1972, abandoned. This application Nov. 27, 1972, Ser. No. 309,905
Claims priority, application Fed. Rep. of Germany, Oct. 12, 1971, 7138603[U]
Int. Cl.[2] B01D *21/16*
U.S. Cl. 210—49 26 Claims



1. A method for mechanical or mechanical-chemical treatment of liquids containing settleable solid pollutants therein by means of flocculation sedimentation and thickening of the settleable solid pollutants therein, leaving separated essentially solid-free liquid, comprising the setps of: destabilizing and aiding flocculation of the said liquid, and then dividing the liquid to be treated in a first sedimentation zone into a plurality of parallel flow paths in the form of channels which are downwardly inclined, flowing said liquid through said channels and settling out the said solid pollutants as the liquid flows through the channels, discharging the solid pollutants from the bottom of said flow paths so that they fall in a uniformly distributed manner downwardly into a second zone which is a thickening zone, removing the separated solid-free liquid from a lower portion of said channels to substantially minimize the flow of liquids below the channels so that the discharged solid pollutants can fall to the bottom of the thickening zone with a minimized liquid flow within the thickening zone, thickening the solid pollutants which have fallen into the thickening zone with mechanical means located in the thickening zone and positioned to contact the solid pollutants as they fall therethrough, and removing the thickened solid pollutants out of

the said thickening zone with a removing means separate from the thickening means and located below the thickening means.

4,142,971

PROCESS AND SYSTEM FOR THE DEHYDRATION OF RESIDUES

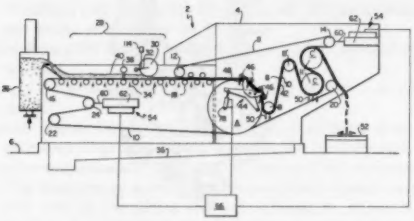
Jean Le Fur, Garches, and René Haas, Chambourcy, both of France, assignors to Degremont, Rueil Malmiason, France

Filed May 25, 1977, Ser. No. 800,550

Claims priority, application France, Jun. 11, 1976, 76 17718

Int. Cl.[2] B01D *33/04, 37/00*

U.S. Cl. 210—77 **27 Claims**



1. A system for the dehydration of residues such as sludge or pulpy residues, said system comprising:

first and second endless filter means between which is fed a residue to be dehydrated, each said filter means being mounted for movement about a respective endless path;

a plurality of cylindrical members mounted to support both said first and second filter means over portions of the respective endless paths thereof;

said first and second filter means, with said residue therebetween, passing alternately over portions of the peripheries of said cylindrical members, thereby pressing and dehydrating said residue;

means for driving first and second adjacent of said cylindrical members at the same speed but in opposite directions, and for thereby driving said first and second filter means;

means for simultaneously and uniformly tensioning said first and second filter means, said tensioning means comprising a separate fluid operated tensioning assembly for each said filter means, and a single fluid source operatively connected to both said tensioning assemblies to simultaneously and equally control the operation thereof, each said tensioning assembly comprising a tensioning roller over which passes the respective filter means, a pair of first articulated arms supporting opposite ends of said tensioning roller, and a pair of first fluid operated piston-cylinder assemblies, one each connected to one of said arms, both of said first piston-cylinder assemblies of each of said tensioning assemblies being operatively connected to said single fluid source to be simultaneously operated thereby; and

supplemental pressing means for pressing said filter means and said residue against a first of said cylindrical members at a uniform pressure regardless of the thickness of said residue between said first and second filter means, said supplemental pressing means comprising a plurality of pressing rollers supported by mounts about the periphery of said first cylindrical member, and fluid operated means for positioning said pressing rollers at a controlled position from said first cylindrical member, said mounts comprising a pair of links, each supporting opposite ends of said rollers, and a pair of second articulated arms, one each pivotally attached to a respective of said links, said fluid operated means comprising a pair of second piston-cylinder assemblies, both connected to said single fluid source and one each connected to a respective said second articulated arm.

11. A process for the dehydration of residues such as sludge or pulpy residues, said process comprising:

feeding residue to be dehydrated between first and second filter means each of which is mounted for movement about a respective endless path by supplying said residue to a horizontal run of said first filter means, and spreading said residue across the width of said first filter means;

driving said first and second filter means at the same speed while passing said first and second filter means with said residue therebetween alternately over portions of the peripheries of a plurality of cylindrical members, thereby pressing and dehydrating said residue;

simultaneously and uniformly tensioning said first and second filter means; and

detecting the termination of supply of residue to said horizontal run and stopping driving of said filter means upon such detection.

4,142,972

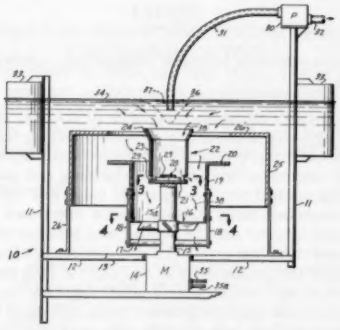
MECHANISM AND METHOD FOR RECOVERING MATERIAL FROM THE SURFACE OF A LIQUID BODY

Eugene B. Nebeker, Los Angeles; Sergio E. Rodriguez, Woodland Hills, and Paul G. Mikoalj, Santa Barbara, all of Calif., assignors to Scientific Associates, Inc., Santa Monica, Calif.

Continuation of Ser. No. 562,488, Mar. 27, 1975, abandoned, which is a continuation of Ser. No. 395,521, Sep. 10, 1973, abandoned, which is a continuation-in-part of Ser. No. 205,923, Dec. 8, 1971, abandoned. This application May 3, 1977, Ser. No. 793,280

Int. Cl.[2] E02B *15/04*

U.S. Cl. 210—84 **19 Claims**



1. Mechanism for removing material from a liquid surface comprising:

a cylindrical rotatable tubular element having a substantially upright axis of rotation and an axial dimension of length, and including flow passage means permitting flow of liquid into and out of the cylindrical rotatable tubular element entering and departing the cylindrical rotatable tubular element from axially spaced-apart locations;

a liquid flow duct having an open entrance end and an open exit end, and having an axis of flow;

means in said liquid flow duct between its entrance end and its exit and for causing liquid to flow through said flow duct from said entrance end to said exit end;

means for rotating the cylindrical rotatable tubular element;

means supporting the cylindrical rotatable tubular element and the flow duct relative to the surface of a body of liquid and to each other so that the cylindrical rotatable tubular element is positioned beneath the liquid surface and rotates around said axis, and

at least a major portion of the flow duct is positioned beneath the elevation of the bottom of the cylindrical rotatable tubular element with the axis of flow at said entrance end coaxial with the axis of rotation of the cylindrical rotatable tubular element, and

the means for causing liquid to flow through the flow duct constructed and arranged to move water downwardly

into the entrance end, through the flow duct, and out the exit end, and the cylindrical rotatable tubular element constructed and arranged to rotate water around its said axis,

whereby there is formed in the liquid above the cylindrical rotatable tubular element, a free vortex into which material on the liquid collects in a pocket; and

means for extracting material from said pocket.

4,142,973

VALVE WITH INDICATOR CIRCUIT

Robert D. Kachman, Madison Heights, Mich., assignor to Facet Enterprises, Inc., Tulsa, Okla.

Filed Feb. 17, 1977, Ser. No. 769,647

Int. Cl.[2] B01D *35/00;* **F16K** *37/00;* **G08B** *21/00*

U.S. Cl. 210—90 **8 Claims**

1. A valve operation indicator arrangement comprising:

a valve;

a valve housing including a valve seat;

means movably mounting said valve to seat and unseat on said valve seat and thereby provide a valving function;

a pliable electrically conductive rubber seal member interposed said valve and said valve housing and adapted to seal the contact area between said valve and valve seat;

a thin compliant metal contact washer interposed said pliable seal member and the contact area between said valve and said valve seat created by said movement of said valve whereby the conductivity of said current flow path in the region of said contact area is enhanced; and,

indicator circuit means responsive to the making or breaking of a circuit flow path through said valve, valve seat, and pliable seal member, said indicator circuit means also including means activating an indicator signal upon making or breaking of said current flow path by seating or unseating of said valve from said valve seat to provide an indication of said valve operation.

4,142,974

APPARATUS FOR MEASURING ULTRAFILTRATION DURING DIALYSIS WITH LONGITUDINALLY MOVABLE AND CLAMPABLE RETENTION MEMBER

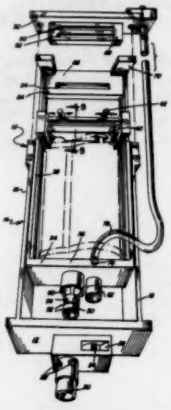
Marc Bellotti, Winnetka; William J. Schnell, Wheeling, and John M. Munsch, Libertyville, all of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Nov. 15, 1977, Ser. No. 851,664

Int. Cl.[2] B01D *31/00*

U.S. Cl. 210—94 **2 Claims**

1. A bracket for a membrane dialysis unit in which said dialysis unit defines blood inlet and outlet ports, a dialysis solution inlet port, and a dialysis solution outlet port, the improvement comprising: a first frame, and a second frame carried by the first frame and adapted for relative axial sliding movement between first and second positions with respect to the first frame, and including means for carrying a membrane dialyzer, said first frame being adapted in the first sliding position to permit the flow of dialysis solution through said dialysis unit, and being adapted in the second sliding position to seal both the dialysis solution inlet port and outlet port of the dialysis unit, and means for measuring the increase of volume of liquid within the sealed flow path of said dialysis unit for measurement of ultrafiltration, in which said second frame also



carries a longitudinally movable and clampable retention member for bearing against the top of and holding a dialyzer member positioned within said second frame.

4,142,975

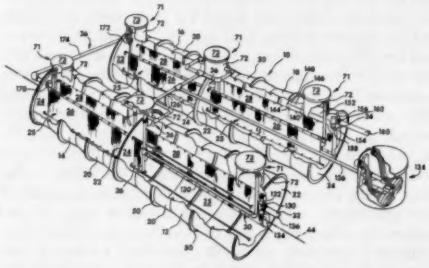
APPARATUS FOR THE TREATMENT OF SEWAGE

Jay Kinzer, Denver, Colo., assignor to Sanilogical Corporation, Denver, Colo.

Filed Sep. 26, 1977, Ser. No. 836,375

Int. Cl.[2] C02C *1/08*

U.S. Cl. 210—195 R **7 Claims**



1. Apparatus for treating sewage to produce a clarified effluent and having a plurality of treatment units arranged in serial fluid communication, comprising:

a series of treatment units including a first unit of the series, a last unit of the series and at least one intermediate unit of the series, each such unit comprising an elongated sidewall of generally circular cross-sectional configuration having first and second end portions and a central longitudinal axis extending therethrough; first and second endwall portions mounted in fluid tight engagement with the first and second end portions of the sidewall to define a generally cylindrically shaped sewage treatment chamber therewithin; first and second baffle means vertically mounted in spaced relationship in the sewage treatment chamber longitudinally of and on opposite sides of te longitudinal axis and in spaced relationship to the sidewall for directing the flow of mixed liquor within the sewage treatment chamber; a conduit mounted in the treatment chamber in substantially parallel relationship relative to the longitudial axis, and being in substantially vertical alignment therewith, and having orifices therein provid-

ing fluid communication between the inside of the conduit and the treatment chamber for supplying an oxygen containing gas to the treatment chamber at a location intermediate the first and second baffle means in a lower portion of the treatment chamber to cause sewage in the chamber to rapidly rise vertically upward between the first and second baffle means and then circumferentially outward and downward in a continuous semi-circular path to the bottom of the treatment chamber and then vertically upward again between the first and second baffle means to cause an intimate and thorough mixing of the gas with the sewage in the treatment chamber and to thereby maintain relatively heavy particulate solid matter in generally uniform suspension throughout the sewage in the treatment chamber, and means for supplying an oxygen containing gas under pressure to the conduit;

inlet means for supplying raw sewage to the first unit of the series;

means for providing a quiescent zone in the last unit of the series;

outlet means for withdrawing clarified effluent from the quiescent zone at about the upper liquid level thereof; and

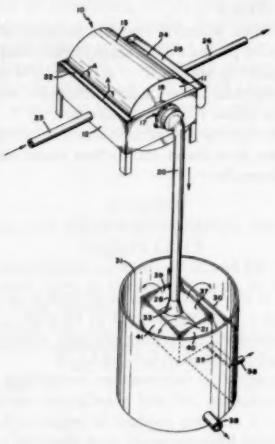
fluid communication means for providing fluid communication between an intermediate top portion of each successive unit of the series and determining an upper liquid level in the treatment chamber of each unit of the series.

4,142,976

BAROMETRIC LEG FOR ROTARY VACUUM FILTER

Paul A. Browne, Orillia, Canada, assignor to Dorr-Oliver Incorporated, Stamford, Conn.

Filed Jan. 3, 1978, Ser. No. 866,578
Int. Cl.[2] B01D *33/06*
U.S. Cl. 210—404 **9 Claims**



1. A rotary vacuum filter comprising:

(a) a filtration member mounted for rotation in a slurry tank,

(b) means for generating a vacuum for application to said filtration member during a portion of the rotation cycle for drawing filtrate from said tank into said filtration member,

(c) valve means for controlling the application of said vacuum and the withdrawal of the filtrate from said filtration member outwardly of said filter,

(d) a seal pit spaced from said valve means and arranged to receive said filtrate from said valve means,

(e) said means for supplying the vacuum comprising an elongated cylindrical barometric leg depending from said filter and having one end connected to said valve means and the opposite free end extending into said seal pit, and through which barometric leg is transmitted said filtrate to said seal pit, and

(f) a predetermined length of said free end of said leg formed to a selected cross-sectional dimension greater than the cross-sectional dimension of the remainder of said elongated barometric leg for reducing turbulence in said seal pit from air-filtrate exiting from said leg.

6. A pulp washer comprising:

(a) a drum mounted for rotation in a pulp slurry tank and having a filter media provided about the outer cylindrical surface thereof,

(b) means for generating vacuum for supply to said drum during a portion of the rotation cycle of said drum for drawing filtrate into said drum through said filter media,

(c) valve means associated with said drum for controlling said vacuum and the withdrawal of the filtrate and air from said drum,

(d) a seal pit spaced from said valve means and arranged to receive said air-filtate mixture therefrom, said vacuum generating means comprising a barometric leg having one end connected to said valve means, a free end located in a seal pit, and an elongated cylindrical portion intermediate said ends, and

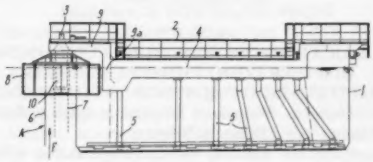
(e) said free end of said barometric leg having a greater cross-sectional dimension than the cross-sectional dimension of said elongated portion for reducing turbulence in said seal pit from said air-filtrate exiting from said leg into said pit.

4,142,977

DEVICE FOR EXTRACTING SLUDGE FROM A CIRCULAR DECANTER

Jean Le Fur, Hauts de Seine, and Jean Durot, Yvelines, both of France, assignors to Degremont, Rueil-Malmaison, France

Continuation-in-part of Ser. No. 698,605, Jun. 22, 1976, abandoned. This application Jun. 20, 1977, Ser. No. 808,351
Claims priority, application France, Aug. 12, 1975, 75 25059
Int. Cl.[2] B01D *21/24*
U.S. Cl. 210—519 **7 Claims**



1. A circular decanter for the decantation treatment of liquid, said decanter comprising:

an enclosure having a substantially circular configuration and including a bottom;

a vertically extending stationary hollow column positioned centrally within said enclosure;

means for introducing liquid to be treated through said column and therefrom into said enclosure, whereby sludge settles from said liquid onto said bottom of said enclosure;

a bridge element spanning said enclosure from said column to the periphery of said enclosure;

motor means mounted above said column for rotating said bridge about said column;

a sludge evacuation duct fixedly positioned coaxially within said column;

a substantially radially extending sludge collection trough integrally attached to said bridge for rotation therewith and having a chamber for collecting therein sludge drawn by suction from said bottom of said enclosure;

suction means for drawing sludge from said bottom of said enclosure into said chamber of said trough; and

the portion of said trough positioned closest to said column

being formed as siphon means for withdrawing sludge collected in said chamber and passing such withdrawn sludge directly into said sludge evacuation duct, said siphon means including an upstream branch extending downwardly into said chamber of said trough and an integral downstream branch extending downwardly into said sludge evacuation duct.

4,142,978

FABRIC TREATING COMPOSITIONS WITH MODIFIED PHASE PROPERTIES

Alan P. Murphy, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 532,276, Dec. 12, 1974, Pat. No. 4,049,858. This application Jul. 12, 1977, Ser. No. 814,961

The portion of the term of this patent subsequent to Sep. 20, 1994, has been disclaimed.

Int. Cl.[2] D06M *13/16*

U.S. Cl. 252—8.7 **4 Claims**

1. A non-staining fabric softening article especially adapted for use in an automatic clothes dryer, comprising:

(a) a fabric conditioning amount of a softener mixture comprising:

(i) a fabric softener component selected from the group consisting of sorbitan esters characterized by at least one free hydroxyl group and a melting point of at least about 38° C., and mixtures thereof, said softener component being substantially free of unneutralized fatty acids; and

(ii) a phase-modifying component selected from the group consisting of water soluble C_{10}–C_{20} neutralized alkyl sulfates, and mixtures thereof, the weight ratio of said softener component to said phase-modifying component being in the range of from about 100:1 to about 1:1; said softener mixture being characterized by a melting point in range of from about 38° C. to about 100° C., said mixture being in releasable combination with;

(b) means for dispensing the softener mixture when said softening article is tumbled with damp fabrics in the dryer under heat sufficient to melt the mixture.

4,142,979

LUBRICATING COMPOSITIONS CONTAINING BISPIPERAZIDO PHOSPHORUS AND TRISPIPERAZIDO PHOSPHORUS COMPOUNDS

Johny C. Hermans, Wespelaar, Belgium, assignor to S.A. Texaco Belgium N.V., Brussels, Belgium

Division of Ser. No. 628,288, Nov. 3, 1975, Pat. No. 4,081,445. This application Nov. 18, 1977, Ser. No. 852,885

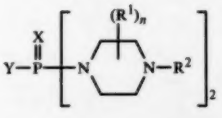
Claims priority, application United Kingdom, May 21, 1975, 21796/75

Int. Cl.[2] C10M *1/48*

U.S. Cl. 252—46.7 **35 Claims**

1. A lubricating composition which comprises a major amount of a lubricating oil and 0.1%-10% by weight of a piperazidophosphorus compound of the formula:

II

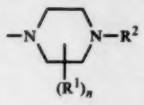


and lubricating-oil-compatible salts of such compounds, wherein

X represents an oxygen or sulphur atom or is absent,

Y represents (i) an aliphatic, cycloaliphatic, or aromatic hydrocarbon group or an N-containing heterocyclic group; (ii) a group of the formula $-NR_2$ in which each group R represents a hydrogen atom, an aliphatic, cycloaliphatic, or aromatic hydrocarbon group or an N-containing heterocyclic group, or the two groups R, together with the nitrogen atom to which they are attached, represent a N-containing heterocyclic ring; (iii) a group of the formula —OR in which R has the meaning given above; or (iv) a group of the formula:

III



R^1 represents an inert substituent on the piperazine ring;

R^2 represents a hydrogen atom, an aliphatic, cycloaliphatic or heterocyclic radical, an acyl group, a sulphonyl group, a phosphorus-containing group $PKR_2{}^3$ or a carbamoyl group, CONHR; R^3 represents an aliphatic, cycloaliphatic, or aromatic hydrocarbon group or a group of the formula —OR, —SR, or $-NR_2$; and

n represents O or an integer, and salts of such compounds in which at least one of the groups R^2 represents a hydrogen atom;

but with the proviso that Y does not represent dimethylamino when X represents oxygen and R^1 and R^2 both represent hydrogen.

4,142,980

MANNICH REACTION PRODUCTS MADE WITH ALKYPHENOL SUBSTITUTED ALIPHATIC UNSATURATED CARBOXYLIC ACIDS

Robert E. Karll, Batavia, and Richard J. Lee, Downers Grove, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Sep. 9, 1977, Ser. No. 831,732

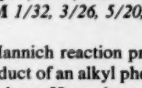
Int. Cl.[2] C10M *1/32, 3/26, 5/20*; C07C *101/72*

U.S. Cl. 252—51.5 A **28 Claims**

1. An oil soluble Mannich reaction product of:

(a) the reaction product of an alkyl phenol, said alkyl substituent containing about 50 to about 20,000 carbon atoms, and an aliphatic unsaturated carboxylic acid containing about 3 to about 100 carbon atoms;

(b) an amine having at least one reactive nitrogen and containing less than about 100 carbon atoms and having the general formula:



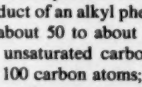
wherein A is a divalent alkylene radical of 2 to 6 carbon atoms and x is an integer of 1 to 10; and

(c) a formaldehyde affording reactant wherein the molar ratio of a:b:c is about 1:0.7–1.0:1.5–2.

23. A lubricating oil composition comprising a major proportion of lubricating oil and a sufficient amount of an oil soluble Mannich reaction product to improve the detergency properties of said lubricating oil, said Mannich reaction product comprising the reaction product of:

(a) the reaction product of an alkyl phenol, said alkyl substituent containing about 50 to about 20,000 carbon atoms, and an aliphatic unsaturated carboxylic acid containing about 3 to about 100 carbon atoms;

(b) an amine having at least one reactive nitrogen and containing less than about 100 carbon atoms having the general formula:



wherein A is a divalent alkylene radical of 2 to 6 carbon atoms and x is an integer of 1 to 10; and

(c) a formaldehyde affording reactant wherein the molar ratio of a:b:c is about 1:0.7–1.0:1.5–2.

4,142,981

TONER COMBINATION FOR CARRIERLESS DEVELOPMENT

Lloyd F. Bean, Rochester, and Roger L. Miller, Penfield, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 5, 1977, Ser. No. 812,949
Int. Cl.[2] G03G *9/08, 13/08*
U.S. Cl. 252—62.1 P **9 Claims**

1. A combination electrophotographic toner composition comprising electrically insulating toner particles and electrically conductive toner particles that are not triboelectrically active with each other, said conductive toner particles comprising resin and magnetic particles, and having a resistivity of between about 10^4 and 10^{10} ohm-cm, and said insulating toner particles comprising resin and carbon black and having a resistivity greater than 10^{11} ohm-cm.

4,142,982

TONER FOR DEVELOPING ELECTROSTATIC LATENT IMAGES COMPRISING RESIN BINDER OF POLYESTER AND SOLID SILICONE VARNISH

Hiroshi Yamakami, Tokyo; Yasuo Mitsuhashi, Yokohama; Seiji Tomari, Toride, and Kaichi Tsuchiya, Fuchu, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 26, 1976, Ser. No. 689,990
Claims priority, application Japan, Jun. 4, 1975, 50-67329; Jun. 6, 1975, 50-68256; Jun. 6, 1975, 50-68761; Jun. 6, 1975, 50-68762
Int. Cl.[2] G03G *9/08*
U.S. Cl. 252—62.1 P **19 Claims**

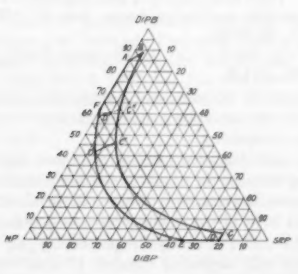
1. In a toner for developing electrostatic latent images comprising a colorant in a resin binder the improvement which comprises a resin binder comprising a polyester resin having a softening point of 80–150° C. according to the Ring and Ball method and a solid silicone varnish having a molecular weight of 500–2000, wherein at least one part by weight of said solid silicone varnish is employed per 100 parts by weight of said polyester resin.

4,142,983

PHTHALATE MIXTURES USEFUL AS LIQUID DIELECTRICS

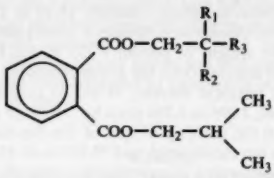
Pierre Jay, Saint-Didier au Mont d'Or, and Ghislain Schwachhofer, Miribel, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Aug. 18, 1977, Ser. No. 825,696
Claims priority, application France, Aug. 20, 1976, 76 258920
Int. Cl.[2] H01B *3/20*
U.S. Cl. 252—64 **14 Claims**



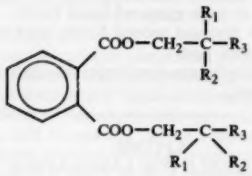
1. A liquid dielectric composition comprising a mixture of:

(a) mixed isobutyl and α-branched higher primary alkyl phthalates of the general formula:


(I)

with,

(b) a compound selected from the group consisting of diisobutyl phthalate, di(α-branched higher primary alkyl) phthalate of the general formula:


(II)

wherein R_1 is an alkyl radical having from 1 to 2 carbon atoms, R_2 is a linear or branched alkyl radical having from 2 to 12 carbon atoms, and R_3 is a hydrogen atom or an alkyl radical as defined by R_1, and mixtures thereof, said composition being within that geometrical area bounded by the points A, B, C, D, E, F, A on the ternary diagram of FIG. 4.

4,142,984

PROCESS FOR IMPROVING GRANULAR DETERGENTS

Osamu Okumura, Funabashi; Hiroshi Nishio, Chiba; Takashi Ikeuchi, Funabashi, and Izumi Yamane, Yokohama, all of Japan, assignors to The Lion Fat & Oil Co., Ltd., Tokyo, Japan

Filed Nov. 3, 1977, Ser. No. 848,143
Claims priority, application Japan, Nov. 9, 1976, 51-133798
Int. Cl.[2] C11D *7/56*
U.S. Cl. 252—105 **6 Claims**

1. A process for treating a granular detergent consisting essentially of from about 10 to 40% by weight of organic, water-soluble, anionic, synthetic surface active agent, from about 10 to 80% by weight of water-soluble inorganic detergent builder salts and up to less than about 50% by weight of nonionic and amphoteric, organic, water-soluble, synthetic surface active agents, water-soluble organic detergent builders, water-soluble sulfates and mixtures thereof, which comprises dry mixing with said granular detergent and adhering to the surfaces of the granules thereof from 0.5 to 5% by weight, based on the weight of said granular detergent, of fine particles of calcium sulfite having an average particle size of about 4 microns or less.

4,142,985

METHOD OF FORMULATING A GERMICIDAL SOAP

Allan L. Louderback, 9661 Longden Ave., Temple City, Calif. 91780, and Robert A. Huddy, 1044 Balboa Dr., Arcadia, Calif. 91006

Filed Jan. 23, 1978, Ser. No. 871,357
Int. Cl.[2] C11D *3/48*
U.S. Cl. 252—106 **5 Claims**

1. A method of formulating a liquid composition particularly suitable for use as a surgical scrub soap, which composition kills bacteria including Staphyllococcus aureus and Pseudomonas aerogenosa bacteria, is nontoxic and nonirritating to the skin, rinses clean without leaving a residue, and is biodegradable, said composition comprising an intimate mixture of 0.081

to 0.099 parts by weight of the cis isomer of 1-(3-chloroallyl)-3,5,7-triaza-1-azoniaadamantane chloride; 18.10 to 22.12 parts by weight of dodecylbenzene sulfonate of triethylamine; 1.674 to 2.046 parts by weight of pectin; 1.332 to 1.628 parts by weight of alcohol selected from the group consisting of methanol, ethanol and mixtures thereof; 14.895 to 18.205 parts by weight of glycerol; 3.096 to 3.784 parts by weight of propylene glycol; 0.414 to 0.506 parts by weight of the disodium salt of ethylene diamine tetraacetic acid; and 50.265 to 61.435 parts by weight of deionized water, comprising the steps of:

mixing well the pectin and alcohol;

mixing the glycerol and propylene glycol with the pectin-alcohol mixture to form a first liquid batch;

separately combining and mixing the deionized water, disodium salt of ethylene diamine tetraacetic acid and cis isomer of 1-(3-chloroallyl)-3,5,7-triaza-1-azoniaadamantane chloride to form a second liquid batch;

mixing well the first and second liquid batches to form a third liquid batch; and

mixing the dodecylbenzene sulfonate of triethylamine into said third batch.

4,142,986

GLASSES SUITABLE FOR LASER APPLICATION

Charles F. Rapp, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Apr. 20, 1978, Ser. No. 897,990

Int. Cl.[2] C03C *3/18*; C09K *11/46*; H03F *1/22*

U.S. Cl. 252—301.4 P **8 Claims**

1. A glass composition suitable for use as an active laser component and consisting essentially of the following components in the relationship expressed according to the following atomic formula

$$A_hBe_k^{2+}Al_l^{3+}Nd_m^{3+}P_n^{5+}(O_x^{2-}F_y^{1-})$$

wherein

A is at least one of the group Na^{1+}, Li^{1+}, K^{1+}, Rb^{1+} and Cs^{1+}, neodymium is present in a laseable amount up to m = 0.015, 2x plus y is always 1, **h, k, l, m and n represent the number of atoms to which they are subscripted with relation to the sum of x plus y,**

h is 0.08 to 0.2 total for all A atoms,

k is 0.15 to 0.3

l is zero to 0.1,

n is 0.02 to 0.15, and

x is 2 n to 3.2 n, and

wherein said glass composition has a fluorescent decay time greater than 450 microseconds at a wave length of about 1050 nm, a cross-section of stimulated emission greater than 3.3×10^{-20}cm.^{2}, and an n_2 value of less than 0.6×10^{-13}cm.^{2}/(statvolts)^2

4,142,987

LUMINESCENT MATERIAL DISPERSION

Dirk J. Zwanenburg, Eindhoven, Netherlands, and Hans-Georg Junginger, Aachen, Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 2, 1977, Ser. No. 802,938

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1976, 2627614

Int. Cl.[2] C09K *11/02, 11/10*

U.S. Cl. 252—301.36 **2 Claims**

1. In a dispersion for electrophotographically applying luminescent materials to picture screens for color television tubes comprising a dispersion in a non-polar dispersing agent of a non-ionic macromolecular compound soluble in said dispersion agent, a luminescent material and a material for controlling the change of said luminescent material the improvement wherein said non-ionic macromolecular compound comprises mixed polymers of vinyl pyridines and alkyl methacrylates wherein the alkyls are of 6–14 carbon atoms and mixed polymers of vinyl pyridines and methacrylates partially esterified with alkyls of 1 to 6 carbon atoms and partially with alkyls of 14 to 20 carbon atoms.

4,142,988

CARBON MONOXIDE SHIFT PROCESS

Godfrey C. Chinchen, Stockton-on-Tees, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Oct. 26, 1976, Ser. No. 735,892

Claims priority, application United Kingdom, Nov. 4, 1975, 45757/75

Int. Cl.[2] C01B *2/10*

U.S. Cl. 252—373 **8 Claims**

1. A process for reacting carbon monoxide with steam to give carbon dioxide and hydrogen over a heterogeneous catalyst consisting essentially of oxides of chromium, iron or mixtures thereof at a pressure of at least 15 atm. abs, the catalyst having an activity in the range 0.05 to 0.2 reciprocal seconds measured according to the equation

$$K = SV \log_e \frac{1}{1 - \frac{C}{C_e}}$$

where

K = rate constant in reciprocal seconds

SV = space velocity of the reacting gas in volumes of gas passing over unit volume of catalyst per second as measured under reaction conditions

C = percentage conversion of carbon monoxide

C_e = percentage conversion of carbon monoxide at equilibrium

and being present in a bed comprising an upstream zone having an outlet temperature in the range 350°–400° C. and a downstream zone having an outlet temperature higher than that of the upstream zone, the catalysts in the zones differing in one or more of the following ways:

(a) the upstream zone contains more catalytic material per unit volume than the downstream zone;

(b) the upstream zone catalyst has a lower area to volume ratio than the downstream zone catalyst; and

(c) the upstream zone catalyst has a lower porosity than the downstream zone catalyst.

4,142,989

PROCESS FOR CONTINUOUSLY REGENERATING A DEGRADED CATALYST USED FOR REMOVING NITROGEN OXIDES FROM EXHAUST GAS

Hiroyuki Kohama, Daido, and Shun-ichi Mizukami, Kobe, both of Japan, assignors to Kobe Steel, Ltd., Kobe, Japan

Filed Aug. 16, 1977, Ser. No. 825,071

Claims priority, application Japan, Aug. 17, 1976, 51-98320; Jun. 9, 1977, 52-68694

Int. Cl.[2] B01J *21/20, 23/92, 23/94*; B01D *53/34*

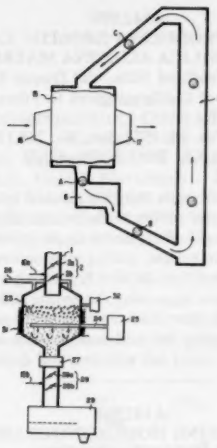
U.S. Cl. 252—411 R **6 Claims**

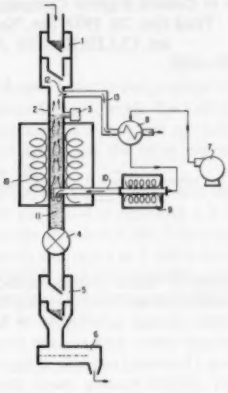
1. A process for continuously regenerating a degraded catalyst from an apparatus for removing nitrogen oxides from an exhaust gas comprising:

charging said degraded catalyst from said apparatus into a heating furnace in a gas-sealed state intermittently by predetermined amounts while the surface level of the catalyst held in the heating furnace is maintained lower than the outlet of catalyst regenerating gas;

subjecting said degraded catalyst to heat treatment at a regeneration temperature of 400°–650° C. with catalyst regenerating gas introduced into the heating furnace, wherein said predetermined amounts of the catalyst to be charged into the heating furnace are such that the charged

catalyst can be heated to said regeneration temperature within 10 minutes;





discharging thus regenerated catalyst from the heating furnace in the gas-sealed state intermittently by predetermined amounts; and

recycling said regenerated catalyst to said apparatus.

4,142,990

ZIEGLER CATALYSTS

Ferdinando Ligorati, Usmate; Renzo Invernizzi; Carlo Collu, both of Milan, and Maurizio Fontanesi, Concorezzo, all of Italy, assignors to EUTECO S.p.A., Milan, Italy

Filed Oct. 6, 1977, Ser. No. 840,184

Claims priority, application Italy, Oct. 19, 1976, 28520 A/76

Int. Cl.[2] C08F *4/02, 4/64*

U.S. Cl. 252—429 C **8 Claims**

1. In a Ziegler catalytic system formed by the combination of an organo-metallic compound of a metal of Group I, II or III of the Periodic System of the Elements according to Mendeleef and a compound of a heavy metal of Group IV, V or VI of said Periodic System supported on a carrier, the improvement which comprises: said carrier being essentially an activated amorphous alumina or alumino-silicate containing from 0.3 to 30% by weight of one or more salts of aluminum with at least one anion selected from the group consisting of the sulphate, phosphate, chlorate, perchlorate and halogen-sulphonate anions or a mixture of the latter with one or more salts of aluminum with a halogen anion, said halogen and oxygenated anions being introduced into the amorphous alumina or alumino-silicate by contacting the latter with one or more acid solutions of said inorganic anions and said alumina or alumino-silicate being then activated by calcination at a temperature of from 250° to 700° C.

4,142,991

SUBSTANTIALLY AGGLOMERATION-FREE CATALYST COMPONENT

Gregory G. Arzoumanidis; Richard F. Gold, both of Stamford, Conn., and Christian G. Michel, Ossining, N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Continuation-in-part of Ser. No. 643,438, Dec. 22, 1975, abandoned. This application Nov. 8, 1976, Ser. No. 739,896

Int. Cl.[2] C08F *4/64*

U.S. Cl. 252—429 B **103 Claims**

1. An improved catalyst component of the type formed by grinding a titanium trichloride material with an effective amount of an electron pair donor compound for improving the stereospecificity or stereospecificity and activity of the catalyst component, said component having a tendency to agglomerate, wherein the improvement comprises making an essentially agglomeration-free finely divided component by performing said grinding in the presence of an effective amount of an agglomeration control compound for substantially preventing agglomeration in the catalyst component, wherein the agglomeration control compound is a polarizable compound which when attached to particles in the composition becomes a steric hindrance to the contact of said particles.

4,142,992

ASYMMETRIC CATALYSIS

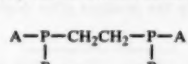
William S. Knowles, St. Louis; Milton J. Sabacky, Ballwin, and Billy D. Vineyard, St. Louis, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 514,987, Oct. 15, 1974, Pat. No. 4,008,281, which is a continuation-in-part of Ser. No. 421,463, Dec. 3, 1973, abandoned. This application Sep. 16, 1976, Ser. No. 724,049

Int. Cl.[2] B01J *31/12*

U.S. Cl. 252—431 P **46 Claims**

1. A coordinated complex catalyst comprising a transition metal selected from the group consisting of rhodium, iridium and ruthenium in combination with from about 0.5 to about 2.0 moles per mole of metal of an optically active bis phosphine ligand represented by the structural formula



wherein A and B each independently represent substituted and unsubstituted alkyl of from 1 to 12 carbon atoms, substituted and unsubstituted cycloalkyl having from 4 to 7 carbon atoms, substituted and unsubstituted aryl; provided that such substiuents provide no significant interference with the steric requirements around the phosphorus atom and A and B are different.

44. A catalyst solution containing (a) bis (cyclooctadiene-1,5)-dichlorodirhodium and (b) optically active 1,2-bis(o-anisylphenylphosphino) ethane.

4,142,993

TRANSITION METAL CATALYST

Richard M. Elofson, Edmonton, and Fahmi F. Gadallah, Winterburn, both of Canada, assignors to The Research Council of Alberta, Edmonton, Canada

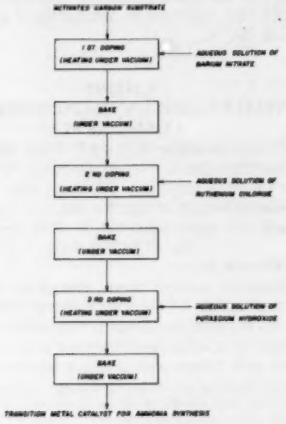
Filed Dec. 7, 1977, Ser. No. 858,120

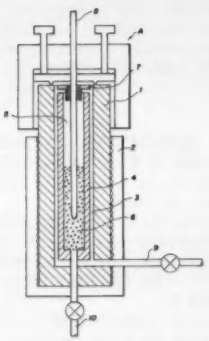
Int. Cl.[2] B01J *21/18;* C01C *1/04*

U.S. Cl. 252—447 **23 Claims**

1. A method for preparing a transition metal catalyst comprising:

doping an activated carbon support material with, in sequence, a solution of an alkaline earth metal compound, a solution of a compound of a transition metal from Group VIII, and a solution of an alkali metal compound.





2. A method for preparing a transition metal catalyst as set forth in claim 1 comprising:

drying and baking the product after doping with each and every solution.

4,142,994

SHAPED CATALYST SUPPORT

Hamid Alafandi, Woodland Hills, Calif., assignor to Filtrol Corporation, Los Angeles, Calif.

Continuation-in-part of Ser. No. 623,938, Oct. 20, 1975, abandoned, which is a continuation-in-part of Ser. No. 428,615, Dec. 26, 1973, Pat. No. 3,962,135. This application Aug. 22, 1977, Ser. No. 826,366

Int. Cl.[2] B01J *29/00, 29/06*

U.S. Cl. 252—450 **21 Claims**

6. A porous shaped siliceous particle having a silica content of in excess of about 85% by weight on a volatile free basis and having a pore volume of more than about 0.3 cubic centimeters per gram and a surface area of in excess of about 100 square meters per gram of the pellet formed from plastic acid treated subbentonite clay.

13. A porous shaped siliceous microsphere having a silica content of in excess of about 85% by weight on a volatile free basis, said microsphere having an abrasion index of less than about 25, a pore volume of more than about 0.4 cc per gram; a major porportion of said pore volume being in pores in excess of 30 A radii and a surface area of more than about 200 M^2 per gram prepared by further acid treating an acid treated plastic sub-bentonite clay.

4,142,995

METHOD OF PRODUCING ZEOLITIC CATALYSTS WITH SILICA ALUMINA MATRIX

Hamid Alafandi, Woodland Hills, and Dennis Stamires, Newport Beach, both of Calif., assignors to Filtrol Corporation, Los Angeles, Calif.

Filed Feb. 16, 1977, Ser. No. 769,118

Int. Cl.[2] B01J *29/06, 37/02*

U.S. Cl. 252—455 Z **3 Claims**

1. A method of forming a cracking catalyst which comprises mixing a faujasite type zeolite with sodium silicate to form a slurry, adjusting the pH of the slurry to about 3 to about 3.5 by addition of aluminum sulfate, adding ammonium hydroxide to adjust the pH to about 9 to about 9.5, forming a silica-alumina gel and zeolite mixture separating the zeolite and silica-alumina gel mixture from the slurry and washing the separated mixture and further exchanging the said zeolite with a salt solution, other than an alkali metal salt solution, and drying the zeolite.

4,142,996

METHOD OF MAKING HOMOGENOUS METAL OXIDE VARISTOR POWDERS

Joe Wong, and Jan W. Szymaszek, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 25, 1977, Ser. No. 844,657

Int. Cl.[2] H01B *1/08, 1/06*

U.S. Cl. 252—518 **13 Claims**

1. A process of manufacturing homogeneous metal oxide varistor powders for use in the pressing stage of varistor manufacture, which pressed powder is to be sintered to form a ceramic varistor wafer, said process comprising the steps of:

(A) heating a hydrated oxy-salt of zinc with suitable amounts of other oxygen bearing metal compounds selected, for each metal whose oxide is desired in the varistor powder, from the group consisting of the metal oxide and metal oxy-salt, said metal compounds having sufficient solubility in the zinc oxy-salt to yield after thermal decomposition of any metal oxy-salt to its corresponding metal oxide, the amount of metal oxide desired in the varistor powder, said oxy-salts having a decomposition temperature substantially below the sintering temperature of varistor manufacture and substantially above the temperature needed to form a hydrated solution, and said metal oxides having a decomposition temperature substantially above the sintering temperature of varistor manufacture, said heating to occur at a temperature otherwise sufficient to form a hydrated solution;

(B) further heating the hydrated solution in step A at an elevated temperature, from that of step A, sufficient to form a dehydrated melt but substantially below the decomposition temperature of any of the oxygen-bearing metal compounds and substantially below the decomposition temperature of the zinc oxy-salt, whereby a dehydrated melt is produced;

(C) still further heating the dehydrated melt at an elevated temperature, from that of step B, sufficient to decompose any oxy-salt present to its corresponding metal oxide but substantially below the sintering temperature of varistor manufacture;

(D) mixing a wetting agent with the material resulting from step C to form a slurry; and then
(E) spray drying the slurry from step D.

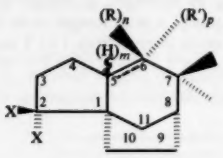
4,142,997

PERFUME COMPOSITIONS CONTAINING TRICYCLIC COMPOUNDS

Bruno Maurer, Collonge-Bellerive, Switzerland, assignor to Firmenich S.A., Geneve, Switzerland

Continuation of Ser. No. 570,827, Apr. 23, 1975, abandoned. This application Dec. 16, 1976, Ser. No. 751,542
Claims priority, application Switzerland, Oct. 10, 1972, 14783/72
Int. Cl.[2] C11B *9/00;* **C07C** *35/22, 49/26, 69/14*
U.S. Cl. 252—522 **2 Claims**

1. A perfume composition which comprises an inert diluent or carrier and at least one of the tricyclic compounds of the formula



Ib

containing a single or double bond in the position indicated by the dotted line at position 5 and wherein the indices *m*, *n* and *p* represent the integers zero or 1 and one of the symbols X represents a COO-alkyl group and the other represents a hydrogen atom, and wherein

(i) the symbol R represents a lower alkyl group when both *m* and *p* are identical and equal to zero and *n* is 1; or
(ii) the symbol R represents a lower alkylidene group when *m* and *n* are identical and equal to 1 and *p* is zero; or
(iii) one of the symbols R and R′ represents a lower alkyl group and the other is a hydrogen atom when each of the indices *m*, *n* and *p* is equal to 1.

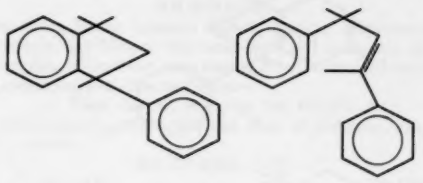
4,142,998

USES OF ALPHA METHYL STYRENE DIMERS IN PERFUMERY PROCESSES AND PRODUCTS

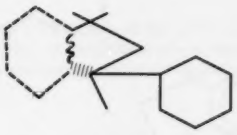
John B. Hall, Rumson; Wilhelmus J. Wiegers, Red Bank; Ira D. Hill, Locust; Robert M. Novak, Fords, and Frederick L. Schmitt, Holmdel, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed May 3, 1978, Ser. No. 902,565
Int. Cl.[2] C11B *9/00*
U.S. Cl. 252—522 **6 Claims**

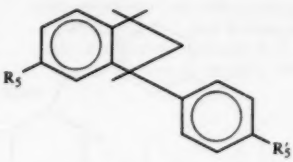
1. A single phase liquid compounded perfumery composition which comprises a natural perfumery oil or synthetic perfumery oil or a mixture of natural perfumery oil and synthetic perfumery oil or a perfumery chemical with which there is intimately admixed from 1 to 30 parts by weight of at least one odorless perfumery extender which is a dimerization product selected from the group consisting of alpha methyl styrene dimerization products, alpha methyl styrene methyl homologue dimerization products, hydrogenated alpha methyl styrene dimerization products and hydrogenated alpha methyl styrene methyl homologue dimerization products per 100 parts by weight of perfumery oil or perfumery chemical, said alpha methyl styrene dimerization product having at least one structure selected from the group consisting of:



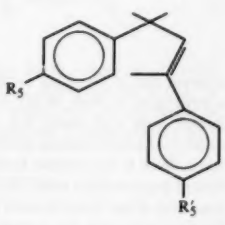
said hydrogenated alpha methyl styrene dimerization product having at least one structure defined according to the generic structure:



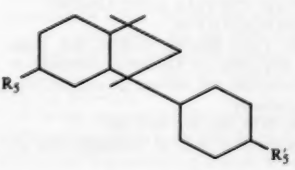
said alpha methyl styrene methyl homologue dimerization product having at least one of the structures selected from the group consisting of:



and



said hydrogenated alpha methyl styrene methyl homologue dimerization product having at least one of the structures selected from the group consisting of:



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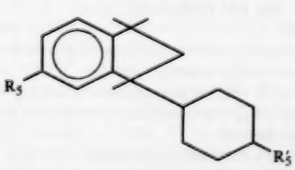

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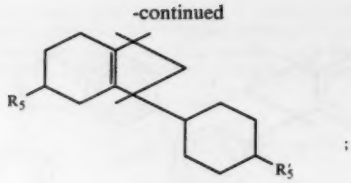

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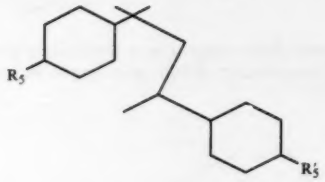

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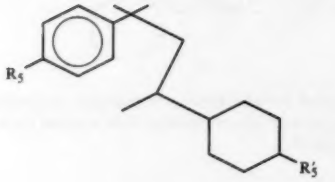

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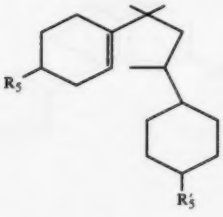


wherein one of R_5 or R_5' is methyl and the other of R_5 or R_5' is hydrogen or both of R_5 and R_5' are methyl; wherein the dashed lines and wavy line represent carbon-carbon single bonds or carbon-carbon double bonds with the proviso that when there is one double bond present in the ring having the dashed lines and the wavy line, only the wavy line is a double bond and when there is more than one double bond present in the ring containing the dashed lines and the wavy line, the ring is a benzene ring; and wherein the line represents either a carbon-carbon single bond or no bond.

4,142,999

STABILIZED LIQUID ENZYME CONTAINING COMPOSITIONS

Helmut Bloching, Hilden; Peter Krings, Krefeld, and Hans Pfeiffer, Haan, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen, Fed. Rep. of Germany

Filed Jul. 20, 1977, Ser. No. 817,140

Claims priority, application Fed. Rep. of Germany, Jul. 27, 1976, 2633601

Int. Cl.[2] C11D *3/26, 7/32*

U.S. Cl. 252—544 **14 Claims**

1. A stabilized liquid concentrate, useable as a washing and cleaning agent, consisting essentially of

(a) 0.01 to 5% of an enzyme preparation containing enzymes selected from the group consisting of proteases, amylases, and mixtures thereof,

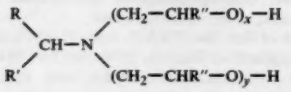
(b) 0.5 to 40% of a nonionic surfactant,

(c) 0 to 30% of an anionic surfactant,

(d) 20 to 50% of water,

(e) 0 to 50% of a solvent or additional water-soluble substance promoting the stability of the enzymes selected from the group consisting of monovalent alcohols having 1 to 3 carbon atoms, polyvalent alcohols having 2 to 6 carbon atoms and 2 to 6 hydroxyl groups, and ethers thereof, and,

(f) relative to 1 part by weight of said enzyme preparation, 2 to 500 parts by weight of an alkoxylated alkylamine of the formula



wherein R is an alkyl group having 4 to 20 carbon atoms, R′ is a member selected from the group consisting of hydrogen and an alkyl group having 1 to 10 carbon atoms, provided that the total of the carbon atoms of R and R′ is from 9 to 19 inclusive, R″ is a member selected from the group consisting of hydrogen, a methyl group, and a hydroxymethyl group, x is an integer from 1 to 5 inclusive, and y is 0 or an integer from 1 to 5 inclusive, provided that the sum of x and y is from 1 to 10 inclusive.

4,143,000

HEAVY RESIDUE FROM HYDROGENATION OF BRANCHED ALIPHATIC DINITRILES FOR CURING EPOXY RESINS

Richard C. Doss, and Ralph P. Williams, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 21, 1978, Ser. No. 888,726

Int. Cl.[2] C08G *59/50*

U.S. Cl. 528—123 **9 Claims**

1. A package containing an epoxy resin and a curing agent therefor said curing agent being a mixture of polyamines obtained as a heavy residue from the distillation of the reaction product from the hydrogenation of branched aliphatic dinitriles containing 7 to 30 carbon atoms per molecule.

4,143,001

APPARATUS AND METHOD FOR RECLAIMING POLYMER WASTE

Karlheinz Raab, Kleinostheim; Konrad Wolff, Frankfurt am Main; Heinrich Koch, Siegburg, and Paul Hagel, Hennef, all of Fed. Rep. of Germany, assignors to Zimmer Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 25, 1978, Ser. No. 872,266

Claims priority, application Fed. Rep. of Germany, Jan. 28, 1977, 2703461

Int. Cl.[2] B29H *19/00*

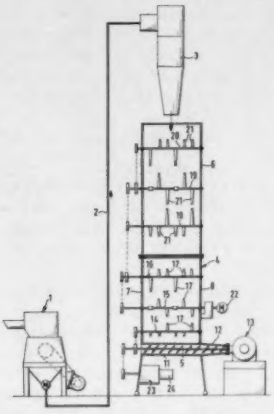
U.S. Cl. 260—2.3 **6 Claims**

1. A continuous process for remelting fluffy, high bulk tangled polymer waste comprising:

cutting the waste into pieces,

passing the cut waste through a charging zone which is gradually narrowing in the direction of conveyance while mechanically separating and loosening the tangled waste,

compressing the loosened waste to one-fourth to one-fifth its uncompressed volume,



heating the compressed waste to the molten state while venting air or other volatile constituents, and
extruding in predetermined shape the molten waste.

4,143,002

CHALK-RESISTANT, MEDIUM TO DARK COLORED POLYURETHANES, POLYMER/POLYOL AND POLYISOCYANATE COMPOSITIONS FOR USE IN PRODUCING SAME AND METHODS FOR MAKING SAID POLYURETHANES

William A. Gill, Hurricane, W. Va., assignor to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 743,614, Nov. 22, 1976, abandoned. This application Jun. 20, 1977, Ser. No. 807,590
Int. Cl.² C08J *9/00*
U.S. Cl. 521—137 **25 Claims**

1. In a polymer/polyol composition which is convertible by reaction with a polyisocyanate to a polyurethane which is pigmented to a medium to dark color and which chalks upon exposure to weather and wherein the polymer of said polymer/polyol is dispersed in the polyol thereof and made from one or more polymerizable ethylenically unsaturated monomers, the improvement providing to said polyurethane resistance to chalking on exposure to weather comprising the presence in said polymer/polyol composition of a metallocene from the class consisting of ferrocene, a ferrocene derivative, cobaltocene and nickelocene in an amount effective to provide chalk resistance.

15. In a polyisocyanate composition which is convertible by reaction with a polymer/polyol to a polyurethane which is pigmented to a dark color and which chalks upon exposure to weather and wherein the polymer of said polymer/polyol is formed in situ in, and is dispersed in, the polyol thereof from one or more polymerizable ethylenically unsaturated monomers, the improvement providing resistance to chalking to said dark color-pigmented polyurethane on exposure to weather comprising the presence of ferrocene or a ferrocene polymer in said polyisocyanate composition.

18. A method for producing a dark colored polyurethane by reacting a mixture comprising (a) a polymer/polyol composition as claimed in claim **2** and (b) an organic polyisocyanate, in the presence of (c) a catalyst for the reaction of (a) and (b) and a dark pigment to produce the polyurethane.

4,143,003

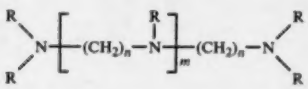
POLYURETHANES MADE WITH LINEAR POLYAMINES

Peter Haas, Haan; Johannes Blahak, Cologne; Hans-Joachim Meiners, and Werner Mormann, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 27, 1977, Ser. No. 801,451
Claims priority, application Fed. Rep. of Germany, Jun. 1, 1976, 2624527
Int. Cl.² C08L *9/00*
U.S. Cl. 521—129 **10 Claims**

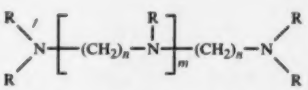
1. A process for the production of polyurethane resins comprising reacting:

(a) polyisocyanates, with
(b) higher molecular weight compounds having at least two hydrogen atoms which are reactive with isocyanates, and, optionally,
(c) chain lengthening agents, in the presence of
(d) tertiary amines as catalysts wherein component (d) are compounds corresponding to the following general formula:



wherein the groups R, which may be the same or different, represent C_1–C_5 alkyl radicals; m represents an integer of from 2 to 7; and the integers n, which may be the same or different, represent **2** or **3**.

6. Compounds corresponding to the following general formula:



wherein the groups R, which may be the same or different, represent methyl or ethyl groups; m represents an integer of from 2 to 7; and the integers n, which may be the same or different, represent 2 or 3, but at least one of them represents 3.

4,143,004

PROCESS FOR THE PREPARATION OF POLYURETHANE FOAM

Mats V. Stromblad, Uddevalla, and Bo T. Idstrom, Stenungsund, both of Sweden, assignors to Berol Kemi AB, Stenungsund, Sweden

Continuation of Ser. No. 618,724, Oct. 1, 1975, abandoned. This application Sep. 29, 1977, Ser. No. 837,967
Claims priority, application Sweden, Oct. 2, 1974, 7412427
Int. Cl.² C08J *9/00*
U.S. Cl. 521—174 **5 Claims**

1. In the process for the preparation of soft highly hydrophilic polyurethane foam which comprises reacting a polyisocyanate with a polyether polyol in the presence of catalyst, blowing agent, and foam stabilizer, the improvement which comprises reacting with the polyisocyanate at least two mutually insoluble polyfunctional polyether polyols, in amounts to provide a ratio of isocyanate groups to hydroxyl groups within the range from about 0.90 to about 0.98, the polyether polyol mixture having from about 50 to about 70% oxyethylene units, a hydroxyl number of from 35 to 45, and from 55 to 80% primary hydroxyl groups by weight of the total number of hydroxyl groups in the polyether polyol mixture.

4,143,005

EXTRUDABLE, NON-FLOWING AND NON-AQUEOUS SOLVENT SOLUBLE HOLD DOWN COMPOUND FOR PRINTED WIRING BOARD ASSEMBLY

Marvin Packer, Bromall, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 19, 1977, Ser. No. 834,269
Int. Cl.[2] C08L *1/10*
U.S. Cl. 260—17 R **10 Claims**

1. In a method of soldering components to printed circuit boards comprising the steps of mounting the components leads into holes in the board, applying a coating to the components to maintain them in place, soldering the components to the board and removing said coating with a solvent rinse wherein the improvement comprises the step of applying as said coating a composition comprising an extrudable, non-flowable, solvent soluble coating containing a mixture of a carboxylic acid, a cellulose material, a solid hydrocarbon resin, a thickening agent and a non-aqueous diluent-solvent wherein each component of the composition is compatible with the other components and soluble in the solvent rinse.

4,143,006

SIZE COMPOSITION FOR TREATING GLASS FIBERS FOR REINFORCEMENT OF PAPER COMPRISING STARCH, A POLYOLEFIN EMULSION AND LUBRICANT

Gerald B. Workman, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jan. 10, 1977, Ser. No. 758,254
Int. Cl.[2] C08L *3/02*
U.S. Cl. 260—17.4 ST **12 Claims**

1. An aqueous size composition for use in the treatment of glass fibers for reinforcement of paper comprising:
(a) a starch,
(b) a polyolefin emulsion, and
(c) a lubricant.

4,143,007

THICKENING AGENT CONTAINING A POLYGALACTOMANNAN GUM AND A COPOLYMER OF AN OLEFINICALLY UNSATURATED DICARBOXYLIC ACID ANHYDRIDE USEFUL IN HYDRAULIC WELL-TREATING

Ronald N. DeMartino, Wayne, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Oct. 31, 1977, Ser. No. 847,339
Int. Cl.[2] C08L *5/00*
U.S. Cl. 260—17.4 ST **32 Claims**

1. A dry blend composition adapted for application as a thickening agent in aqueous solutions which comprises (1) a polygalactomannan gum and (2) a copolymer of an α,β-olefinically unsaturated dicarboxylic acid anhydride and a comonomer selected from α-olefinically unsaturated hydrocarbons and alkyl vinyl ethers.

4,143,008

NOVEL ADHESIVE, MOLDING AND FILLER COMPOSITION INCORPORATING TOLUENE DIISOCYANATE RESIDUE

Leon M. Zwolinski, Orchard Park, and John W. Frink, Buffalo, both of N.Y., assignors to Allied Chemical Corporation, Morris Township, N.J.

Continuation-in-part of Ser. No. 541,461, Jan. 16, 1975, abandoned. This application Jul. 14, 1977, Ser. No. 815,731
Int. Cl.[2] C08G *18/06;* C08L *91/00*
U.S. Cl. 260—18 TN **3 Claims**

1. A composition of matter consisting essentially of a reaction product of TDI residue with polyhydroxy organic composition wherein at least about 90 numerical percent of the hydroxy groups are attached to aliphatic carbon atoms, sufficient polyhydroxy organic composition being provided to react with up to about 85 numerical percent of the reactive isocyanate groups in said residue, said TDI residue being that residue remaining after vaporizing toluene diisocyanate from a reaction mixture, which results from substantially completely phosgenating toluene diamine until between about 12 and about 30 percent by weight of toluene diisocyanate remains in the residue, said residue including from about six to about twenty-five weight percent of unreacted isocyanate groups, being solid at 25° C. and in average particle size smaller than about 40 mesh.

4,143,009

POLYURETHANE-EPOXY CASTING RESIN

Frank Dewey, 1020 Market St., St.Joseph, Mich. 49085

Filed Mar. 2, 1977, Ser. No. 773,702
Int. Cl.[2] C08G *18/36, 18/14, 18/58*
U.S. Cl. 260—18 PT **14 Claims**

1. An epoxy-urethane resin comprising the reaction product of: a mixture of from 5 to 300 parts by weight of an epoxy compound selected from the group consisting of aliphatic diepoxides, cycloaliphatic diepoxides, polyalkylene ether glycol bisepoxides, and epoxidized vegetable oils, said epoxy compounds having no reactive hydroxyl groups attached thereto, and 100 parts by weight of a hydroxyalkyl tertiary amine having at least two hydroxyalkyl groups; with from 0.5 to about 2 equivalents per 1 equivalent of hydroxyalkyl tertiary amine of an isocyanate compound having at least two isocyanate groups.

4,143,010

HIGH RETENTION WOOD PRESERVATIVE COMPOSITION

Jaromir R. Rak, Ottawa, Canada, assignor to Canadian Patents and Development Limited, Ottawa, Canada

Continuation-in-part of Ser. No. 657,398, Feb. 12, 1976, Pat. No. 4,085,251, which is a continuation-in-part of Ser. No. 417,404, Nov. 19, 1973, abandoned. This application Mar. 27, 1978, Ser. No. 890,518
Int. Cl.[2] C08L *23/12, 25/06;* C09D *3/80, 5/14*
U.S. Cl. 260—23 S **11 Claims**

1. A penetrating wood preservative solution, causing penetration and substantial immobilization of the preservative agent within the wood, comprising:
(a) an organic wood preservative agent in dissolved amounts of at least 1% w/v based on the solution;
(b) a hydrophobic agent selected from the group consisting of fatty acids and their esters, fatty alcohols and paraffin waxes in amounts of from about 0.5% up to about 5% w/v based on the solution, said fatty acids and alcohols having at least 10 carbon atoms in the molecule;
(c) an amorphous vinylic-type polymer in amounts of at least about 0.2% w/v up to about 1% w/v based on the solution, said polymer being soluble in the solution; and
(d) a penetrating organic solvent for (a), (b), and (c).

4,143,011

VINYLIDENE CHLORIDE COPOLYMER COMPOSITION

Nobuyuki Hisazumi, and Tsutomu Uehara, both of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 2, 1977, Ser. No. 847,929
Claims priority, application Japan, Nov. 19, 1976, 51-139088
Int. Cl.[2] C08L *27/08*
U.S. Cl. 260—23 EP **9 Claims**

1. A vinylidene chloride copolymer composition which comprises 0.01 to 5 wt. parts of a rigid polymer solidified as fine particles in 100 wt. parts of a matrix of vinylidene chloride copolymer wherein said rigid polymer is solid at room temperature, has a softening temperature of 50° to 180° C. and a melt viscosity of 0.1 to 500 poise at 170° C. and is soluble in vinylidene chloride monomer and is substantially immiscible with

the vinylidene chloride copolymer; and wherein said copolymer composition is prepared by polymerizing 60 to 90 wt.% of vinylidene chloride and 40 to 5 wt.% of a comonomer in the presence of said rigid polymer.

4,143,012

WATER BASED MODIFIED STYRENE ALLYL ALCOHOL RESIN PRIMER

Monica H. Verma, Troy, Mich., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 738,855, Nov. 4, 1976. This application Jan. 20, 1978, Ser. No. 871,118

Int. Cl.[2] C09D *3/74, 5/02, 5/08*

U.S. Cl. 260—23 ST 7 Claims

1. An aqueous primer composition comprising 5–50% by weight of a film forming binder and 50–95% by weight of an aqueous medium; wherein the binder consists essentially of

a reaction product of a styrene/allyl alcohol polymer consisting essentially of 90–70% by weight styrene and 10–30% by weight allyl alcohol that has been reacted with a drying oil fatty acid and maleic acid or maleic anhydride; and the composition contains about 0.05–1.0% by weight, based on the weight of the composition, of an anionic polyelectrolyte dispersant consisting essentially of an oligomer of the formula

$$+CH_2-CHCN+_n \quad +CH_2-\underset{\underset{COOH}{|}}{CH}+_m SO_3M$$

where n and m are positive integers to provide a molecular weight of about 500–2500 and M is an alkali metal and the composition contains pigments in a pigment to binder weight ratio of about 300/100 to 10/100

wherein the pigments are selected from the group consisting of talc, barytes, zinc molybdate, calcium molybdate, zinc/calcium molybdate, zinc oxide, calcium phosphosilicate and mixtures thereof, and the composition contains sufficient ammonia or an amine to provide the composition with a pH of 6.5–8.5.

4,143,013

RADIATION CURABLE COATING COMPOSITIONS

Richard D. Jenkinson, St. Albans, and Charles H. Carder, Amma, both of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Filed Feb. 22, 1978, Ser. No. 880,121

Int. Cl.[2] C08L *33/08*

U.S. Cl. 260—29.1 SB 12 Claims

1. In the process of coating a substrate wherein a radiation curable coating composition containing an acrylyl oligomer is applied to the substrate and then cured by exposure to radiation, the improvement which comprises admixing with the radiation curable coating composition, prior to applying it to the substrate, a diluent chosen from the group consisting of tetraethylorthosilicate and tetraethoxyethylorthosilicate, the concentration of said diluent being from 1 to 50 weight percent, based on the weight of radiation curable coating composition and diluent.

4,143,014

NOVEL COMPOSITIONS

Alexander McLaughlin, Meriden; Harold E. Reymore, Jr., Wallingford, and Reinhard H. Richter, North Haven, all of Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Nov. 9, 1977, Ser. No. 849,859

Int. Cl.[2] B32B *13/12*; C08G *18/76*

U.S. Cl. 260—29.2 TN 12 Claims

1. A storage stable aqueous solution comprising the product obtained by admixing at a temperature in the range of 25° C. to 100° C. (a) a polyether glycol selected from the group consisting of polyethylene glycols having a molecular weight from 600 to 3000 and polypropylene glycols capped with from 15 to 85 percent by weight of ethylene oxide and having a molecular weight from 1000 to 3500, with (b) a mixture of polymethylene polyphenyl polyisocyanate containing from 25 to 90 percent by weight of methylenebis(phenyl isocyanates), the remainder of said mixture being polymethylene polyphenyl polyisocyanates of functionality higher than 2.0, the proportions of (a) and (b) being such that there are from 0.1 to 0.99 equivalents of polyol per equivalent of polyisocyanate, and, during the time when the product so obtained is completely soluble in water, admixing said product with sufficient water to form a clear aqueous solution.

4,143,015

WATER BASE, NON-POLLUTING, SLOW LEACHING, ANTI-FOULING PAINT

Ernolff Soeterik, 1180 Turquoise St., San Diego, Calif. 92109

Filed Jan. 21, 1977, Ser. No. 761,306

Int. Cl.[2] C08L *61/24, 31/04*

U.S. Cl. 260—29.4 UA 11 Claims

1. A water base paint resistant to fouling by marine organisms when exposed to sea water which comprises:

(a) about 100 parts by weight water;

(b) from about 12 to 60 parts by weight modified poly-vinyl acetate resin;

(c) from about 6 to 30 parts by weight of a poly-functional amine having low volatility;

(d) from about 15 to about 130 parts by weight liquid urea formaldehyde resin; and

(e) from about 30 to 600 parts by weight of a finely divided toxicant.

4,143,016

PREPARATION OF MELAMINE DERIVATIVES

Hans Hönel, Frankfurt am Main; Karlfried Keller, Bergen-Enkheim; Walter Michel, Frankfurt am Main, and Manfred Schön, Rodgau, all of Fed. Rep. of Germany, assignors to Cassella Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Feb. 6, 1978, Ser. No. 875,307

Claims priority, application Fed. Rep. of Germany, Apr. 9, 1977, 2716006

Int. Cl.[2] C08L *61/28*

U.S. Cl. 260—29.4 R 5 Claims

1. A process for the preparation of a substantially monomeric methylolmelamine etherified by methanol which contains per mol of melamine, more than 5 mols of formaldehyde and more than 4 mols of methyl-etherified methylol groups which has a viscosity of less than 10 pascalseconds at 25° C. at a solids content of at least 95%, said process comprising reacting melamine and formaldehyde a molar ratio of from 1:6.2 to 1:8, at a temperature of from 40° to 60° C., in the presence of a basic catalyst in a reaction mixture which contains from 10 to 40% by weight of water and from 40 to 20% by weight of methanol thereby producing a suspension of methylolmelamine, and then without separating methylol melamine from the suspension etherifying the methylol melamine in the presence of from 15 to 30 mols of methanol per mol of melamine, at a temperature of from 25° to 50° C., in the presence of a strong acid.

4,143,017

PROCESS OF PRODUCING SOFT CONTACT LENSES

Niro Tarumi, Tokyo, and Makoto Tuchiya, Musashino, both of Japan, assignors to Hoya Lens Corporation, Tokyo, Japan

Filed Feb. 25, 1977, Ser. No. 771,932

Claims priority, application Japan, Feb. 25, 1976, 51-19652

Int. Cl.[2] C08F *18/24, 216/02*

U.S. Cl. 260—29.7 H 31 Claims

1. A soft contact lens swelled by hydration treatment having a water content of 20 to 45% and a tensile strength of at least 500 g/mm^2 and consisting of a copolymer of 70 to 90% by weight of an alkylene glycol monomethacrylate, 0 to 2% by weight of a polyfunctional monomer as a crosslinking agent, 0

to 5% by weight of an unsaturated carboxylic acid containing at least one carboxyl group in its molecule, 2 to 25% by weight of a methacrylic acid ester and 0 to 10% by weight of a vinyl monomer.

4,143,018

CEMENTS

Stephen Crisp, Hounslow, and Alan D. Wilson, Liphook, both of England, assignors to National Research Development Corporation, England

Filed Oct. 16, 1975, Ser. No. 622,801

Claims priority, application United Kingdom, Oct. 24, 1974, 46022/74

Int. Cl.[2] C08K *3/40*

U.S. Cl. 260—29.6 M **22 Claims**

1. A water hardenable cement composition which comprises a poly(carboxylic acid) or anhydride thereof which forms the poly(carboxylic acid) in the presence of water, an aluminosilicate glass comprising from 0 up to 8 percent by weight of fluorine, the ratio of acidic to basic oxides in the glass being from 0.1 to 3.0 that the glass will react with said poly(carboxylic acid) in the presence of water to form a poly(carboxylic) cement, and a water soluble chelating agent.

4,143,019

ADHESIVE JOINT DRESSING COMPOSITIONS AND METHODS OF USING SAME

David R. Burley, Cranbury, N.J., assignor to Tile Council of America, Inc., Princeton, N.J.

Continuation of Ser. No. 572,660, Apr. 29, 1975, Pat. No. 4,055,529. This application Jul. 21, 1977, Ser. No. 817,553

The portion of the term of this patent subsequent to Oct. 25, 1994, has been disclaimed.

Int. Cl.[2] C08L *33/02*

U.S. Cl. 260—29.6 RW **20 Claims**

1. A dressing composition capable of selectively adhering to substrate surfaces and forming on adherable substrate surfaces a non-porous, stain resistant, washable layer when cured, said composition comprising

(i) a high molecular weight polymer in the form of an emulsion which is not alkali-thickenable and which emulsion is destabilized in the presence of polyvalent cations whereby the droplets of the polymer no longer remain suspended in the liquid phase, said polymer selected from the group consisting of polymers of carboxylic acids, polymers of esters of carboxylic acids, and copolymers of a carboxylic acid or ester of a carboxylic acid with one or more monomers from the group consisting of carboxylic acids, esters of carboxylic acids, acrylonitriles, acrylamides, aromatic compounds and alkenes, said polymer characterized as being room-temperature curable and forming a water-resistant film when cured;

(ii) a high molecular weight polymer which is alkali-thickenable whereby it is capable of substantially increasing the viscosity of the composition as its pH is increased above neutral pH, said polymer in the form of a colloidal dispersion or emulsion of polymer particles which dispersion or emulsion is destabilized in the presence of polyvalent cations, said polymer selected from the group consisting of polymers of carboxylic acids, polymers of esters of carboxylic acids, and copolymers of a carboxylic acid or ester of a carboxylic acid with one or more monomers from the group consisting of carboxylic acids, esters of carboxylic acids, acrylonitriles, acrylamides, aromatic compounds and alkenes, said polymer characterized as being room-temperature curable and forming a water-resistant film when cured;

(iii) an alkaline agent wherein the cation of said agent is mono-valent, said alkaline agent present in sufficient amounts to cause the alkali-thickenable polymer to increase the viscosity of the composition; and

(iv) water; wherein the total weight of polymer solids is in the range of 5–60% by weight of the total composition, wherein the weight ratio of the alkali-thickenable polymer to the non-alkali thickenable polymer is in the range 2.2:1 to 0.9:1, and wherein the composition has a thixotropic rheology and a viscosity which is greater than about 50,000 cps at 70° F.

4,143,020

COPOLYMERS OF SULFONIC ACID MONOMERS

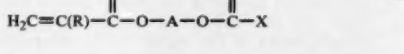
William D. Emmons, Huntingdon Valley, and Graham Swift, Ambler, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 273,886, Aug. 7, 1972, which is a division of Ser. No. 134,905, Apr. 16, 1971, Pat. No. 3,770,801. This application Feb. 23, 1978, Ser. No. 882,521

Int. Cl.[2] C08F *2/00, 4/04, 28/00*

U.S. Cl. 260—29.6 SQ **12 Claims**

1. An addition copolymer of a compound, and salts thereof, of the formula:



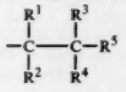
(I)

wherein

R is hydrogen or methyl,

A is an alkylene group having 2 to 10 carbon atoms, at least 2 of which extend in a chain between the adjoined oxygen atoms, and

X is selected from the group consisting of (a) a benzene ring substituted by at least one sulfonic acid group. (b) a benzene ring substituted by at least one sulfonic acid group and at least one carboxylic group, and (c) an alkyl group of the formula



wherein on of R^1 and R^3 is a sulfonic acid group and the other is H,

R^2 is selected from the group consisting of H and (C_1–C_4)alkyl groups,

R^4 is selected from the group consisting of H, —COOH, and (C_1–C_4)alkyl groups, and

R^5 is selected from the group consisting of H and (C_1–C_4)alkyl groups, with the proviso that only one of R^2, R^4 and R^5 is alkyl, except that both R^2 and R^4 may be alkyl, provided that R^1 and R^5 are both H,

with at least one other copolymerizable ethylenically unsaturated monomer, and in which the monomer of Formula I is present in an amount of about 0.1% to 10% by weight of the total monomers.

4,143,021

COMPOSITION SUITABLE FOR USE AS DESENSITIZING GUMMING SOLUTION FOR LITHOGRAPHIC PRINTING PLATES

Walter L. Garrett, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jul. 23, 1976, Ser. No. 708,233

Int. Cl.[2] C08L *33/26*

U.S. Cl. 260—29.6 E **25 Claims**

1. An improved composition, suitable for use as a desensitizing gum for treating imaged lithographic printing plates, comprising water, an active polymer component, as defined in the specification, for rendering non-image areas of the lithographic plate hydrophilic, said active polymer component being present in an amount of from about 3 to about 30 weight percent active polymer component, based on the weight of the active polymer component and the water, and a suitable polyoxyalkylene glycol in an amount which is effective to reduce tacki-

ness while the composition is drying and which does not adversely affect the printing properties of a plate treated with said composition, said polyoxyalkylene glycol being selected from the group consisting of (a) a polyoxyethylene glycol with an average molecular weight of at least about 200; (b) a polyoxypropylene glycol with an average molecular weight of at least about 200; (c) a mixture of components from a and b; (d) a triether of glycerine with a mixture of polypropylene and polyethylene oxides; and (e) a triether of glycerine with polypropylene oxides.

4,143,022

FOUNDRY RESIN COMPOSITIONS COMPRISING FURFURYL ALCOHOL AND A COPOLYMER OF STYRENE AND ALLYL ALCOHOL

Rajaram Iyer, Park Forest, Ill., assignor to Foseco Technik AG, Zug, Switzerland

Filed Dec. 21, 1977, Ser. No. 862,912

Claims priority, application United Kingdom, Dec. 21, 1976, 53379/76

Int. Cl.[2] **C08K** *3/36;* **C08L** *61/06;* **C08K** *5/05;* **B22C** *1/22*

U.S. Cl. 260—30.4 SB **15 Claims**

1. A resin composition for use in the production of foundry moulds and cores, which composition comprises furfuryl alcohol and a copolymer of styrene and allyl alcohol said copolymer being capable of forming a homogeneous, stable solution with furfuryl alcohol.

4,143,023

PLASTICIZED POLYCARBONATE COMPOSITION

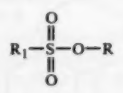
Victor Mark, Evansville, Ind., Phillip S. Wilson, Louisville, Ky., assignors to General Electric Company, Pittsfield, Mass.

Filed Jun. 29, 1977, Ser. No. 811,066

Int. Cl.[2] **C08K** *5/41*

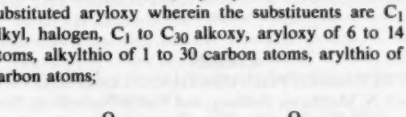
U.S. Cl. 260—30.8 R **7 Claims**

1. A plasticized polycarbonate composition comprising in admixture a high molecular weight aromatic carbonate polymer and a minor amount of an organic plasticizer selected from the following formulae:



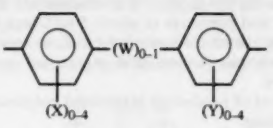
I.

wherein R is selected from the group consisting of C_1 to C_{30} alkyl, cycloalkyl of 4 to 10 carbon atoms, unsubstituted aryl of 6 to 14 carbon atoms and substituted aryl wherein the substituents are C_1 to C_{30} alkyl, halogen, C_1 to C_{30} alkoxy, aryloxy of 6 to 14 carbon atoms, alkylthio of 1 to 30 carbon atoms, arylthio of 6 to 14 carbon atoms; R_1 is selected from the group defined for R and can also be a C_1 to C_{30} alkoxy, cycloalkoxy of 4 to 10 carbon atoms, aryloxy of 6 to 14 carbon atoms and substituted aryloxy wherein the substituents are C_1 to C_{30} alkyl, halogen, C_1 to C_{30} alkoxy, aryloxy of 6 to 14 carbon atoms, alkylthio of 1 to 30 carbon atoms, arylthio of 6 to 14 carbon atoms;

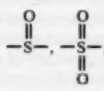


II.

R is as defined above; A is C_1 to C_{30} alkylene, arylene of 6 to 14 carbon atoms, alkarylene of 7 to 30 carbon atoms, aralkylene of 7 to 30 carbon atoms, ardialkylene of 8 to 30 carbon atoms, and



wherein W is selected from the group consisting of C_1 to C_{10} alkylene, C_1 to C_{10} alkylidene, cycloalkylene of 4 to 8 carbon atoms, cycloalkylidene of 4 to 8 carbon atoms; —O—, —S—,



X and Y are independently selected from the group consisting of halogen and C_1 and C_{12} alkyl; a, b, c and d are integers of 0 to 1 with the proviso that the sum of a, b, c and d is at least 1.

4,143,024

THERMOPLASTIC POLYCARBONATE MOULDING COMPOSITIONS WITH IMPROVED EASE OF MOULD RELEASE

Siegfried Adelmann; Dieter Margotte; Hugo Vernaleken, and Werner Nouvertne, all of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 710,069, Jul. 30, 1976, Pat. No. 4,065,436. This application May 2, 1977, Ser. No. 793,011

Claims priority, application Fed. Rep. of Germany, May 7, 1976, 2620257; Feb. 26, 1977, 2708467

The portion of the term of this patent subsequent to Dec. 27, 1994, has been disclaimed.

Int. Cl.[2] **C08L** *69/00;* **C10M** *7/24*

U.S. Cl. 260—31.2 XA **8 Claims**

1. A thermoplastic moulding composition comprising a high molecular thermoplastic aromatic polycarbonate based on an aromatic dihydroxy compound and containing 0.01 to 0.5% by weight of a partial ester of a saturated aliphatic carboxylic acid with 10 to 20 C atoms per molecule and an aromatic hydroxy compound with from 1 to 6 OH groups.

4,143,025

METHOD FOR PRODUCING POLYLAUROLACTAM POWDER COMPOSITIONS FOR THE COATING OF METALS AT HIGH TEMPERATURES

Rainer Feldmann, Marl; Hans-Joachim Panoch; Heinz Scholten, both of Haltern, and Roland Feinauer, Marl, all of Fed. Rep. of Germany, assignors to Chemische Werke Huls AG, Marl, Fed. Rep. of Germany

Filed Sep. 10, 1976, Ser. No. 722,110

Claims priority, application Fed. Rep. of Germany, Oct. 9, 1975, 2545267

Int. Cl.[2] **C08K** *5/05*

U.S. Cl. 260—33.4 R **10 Claims**

1. A method of producing pigmented polylaurolactam powders comprising:

(a) polymerizing laurolactam in the presence of about 2 to 10 percent by weight of water, about 0.3 to 0.7 percent by weight of phosphoric acid, and at a temperature of about 265° to 300° C., in the absence of chain stabilizers under an internal pressure of about 14 to 25 bars to a polylaurolactam having a relative viscosity of about 1.25 to 1.65;

(b) granulating said polylaurolactam of (a);

(c) extracting said granulated polylaurolactam with ethanol or methanol at a temperature of about 25° to 70° C.;

(d) mixing said extracted polylaurolactam with about 1 to 20 percent by weight pigment dispersed in a liquid selected from the group consisting of primary aliphatic alcohols

having 1–3 carbon atoms, cyclohexanol and ethylbutanol and treating the mixture at a temperature of about 110° to 140° C. and pressures of about 5 to 8 bars; and

(e) cooling the treated mixture of (d) to room temperature with precipitation of said pigmented polylaurolactam powders.

7. A method of producing pigmented polylaurolactam powders comprising:

(a) polymerizing laurolactam in the presence of about 2 to 10 percent by weight of water, about 0.3 to 0.7 percent by weight of phosphoric acid and at a temperature of about 265° to 300° C. in the absence of chain stabilizers under an internal pressure of about 14 to 25 bars to a polylaurolactam having a relative viscosity of about 1.25 to 1.45;

(b) granulating said polylaurolactam of (a);

(c) extracting said granulated polylaurolactam with ethanol or methanol at a temperature of about 25° to 70° C.;

(d) mixing said extracted polylaurolactam with about 1 to 20 percent by weight pigment dispersed in a liquid selected from the group consisting of primary aliphatic alcohols having 1–3 carbon atoms, cyclohexanol and ethylbutanol and treating the mixture at a temperature of about 110° to 140° C. and pressures of about 5 to 8 bars;

(e) cooling the treated mixture of (d) to room temperature with precipitation of pigmented polylaurolactam powder; and

(f) condensing the precipitated powder of (e) at a temperature between about 140° C. and below the melting point of said polylaurolactam to said pigmented polylaurolactam powders having a relative viscosity of about 1.55 to 1.65.

4,143,026

PIGMENTED ABS POLYMER AND POLYAMIDES

Peter Panek; Peter Woditsch; Wolfgang Ritter, and Peter Tacke, all of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 19, 1977, Ser. No. 760,807

Claims priority, application Fed. Rep. of Germany, Jan. 22, 1976, 2602364

Int. Cl.[2] C08K *9/04, 9/10*

U.S. Cl. 260—42.14 **4 Claims**

1. A process for producing high-impact plastic comprising mixing an aqueous suspension containing about 40 to 70 parts by weight of titanium doxide with an aqueous suspension containing about 60 to 30 parts by weight of a polymer comprising units of the formula $(CHR—CH_2)_n$ where R is hydrogen or methyl and n is a number about from 50 to 40,000, including a dispersion aid in the joint suspension, spray drying the joint suspension to form a pigment preparation, and mixing about 0.1 to 60 parts by weight of the preparation with about 99.9 to 40 parts by weight of ABS polymer or polyamide.

4,143,027

ORGANOFUNCTIONAL SILANE COUPLING AGENT-POWDER MIXTURES

Kenneth J. Sollman, Brewster; Robert J. Pickwell, Mt. Kisco, both of N.Y., and Maurice W. Ranney, Tokyo, Japan, assignors to Union Carbide Corporation, New York, N.Y.

Continuation of Ser. No. 483,015, Jun. 25, 1974, abandoned. This application May 8, 1978, Ser. No. 903,406

Int. Cl.[2] C08K *9/06*

U.S. Cl. 260—42.15 **6 Claims**

1. A powder silane mixture in which the silane comprises 40 to about 80 weight percent of the mixture, the remainder is the powder, wherein the silane has the formula:

$$HS(CH_2)_xCHRCH_2Si(OR')_3$$

in which R is hydrogen or methyl, x is 0 or 1, when x is 0, R is hydrogen, and R′ is an ethyl or n-propyl group and the powder is inorganic particulate materials having the capacity of absorbing the aforementioned amount of the silane and providing retention of the characteristics of a free flowing powder or free flowing agglomerates or aggregates after 6 months storage in a closed glass jar and, after 6 months storage in a closed jar, providing that at least 60 weight percent of the silane is extractable by boiling in monochlorobenzene.

4,143,028

ALKYLATED 1,1′-BIPHENYL-2,2′-DIYL PHOSPHONITES AND STABILIZED COMPOSITIONS

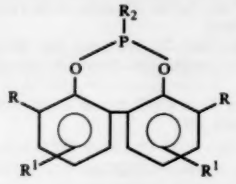
John D. Spivack, Spring Valley, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 5, 1977, Ser. No. 857,167

Int. Cl.[2] C08K *5/53*

U.S. Cl. 260—45.95 D **12 Claims**

1. A phosphonite of the formula

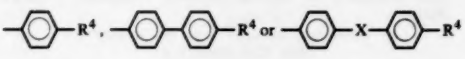


wherein

R is an alkyl group of 1 to 18 carbon atoms,

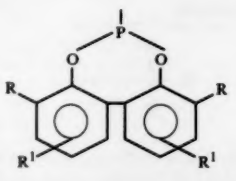
R^1 is hydrogen or an alkyl group of 1 to 18 carbon atoms, and

R^2 is an alkyl group of 1 to 18 carbon atoms, phenyl, phenyl substituted with 1 to 3 alkyl groups each having 1 to 8 carbon atoms, or a group of formulae



where

R^4 is of the formula



and

X is oxygen or sulfur,

8. A composition of matter comprising an organic material subject to oxidative, thermal and actinic degradation stabilized with a compound of claim 1.

4,143,029

FLAME RETARDED POLYURETHANE COMPOSITIONS

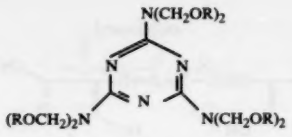
Demetreos N. Matthews, Bethany, and Walter Nudenberg, Newton, both of Conn., assignors to Uniroyal, Inc., New York, N.Y.

Filed May 13, 1977, Ser. No. 796,580

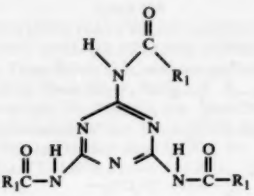
Int. Cl.[2] C08K *5/34*

U.S. Cl. 260—45.8 NT **12 Claims**

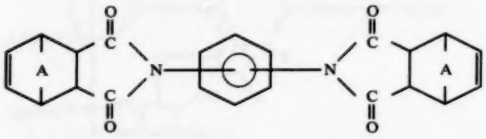
1. A flame retarded polyurethane elastoplastic compound which is non-drip at combusion conditions which comprises said elastomer in combination with a minor amount of (A) a hexaalkoxymethylmelamine having the general formula



wherein R is a C_1–C_5 alkyl radical; and (b) a synergist wherein the synergist is (1) a trihydrocarbylcarbonylmalemine having the general formula



wherein R_1 is C_1–C_5 alkyl, phenyl toluyl, dimethylphenyl or cyanomethyl; (2) para phenylene-bismaleimide; (3) an aromatic bismaleimide generator having the general formula



wherein A is —CH_2— or —O—; or (4) mixtures thereof.

4,143,030

SMOKE RETARDANT VINYL CHLORIDE AND VINYLIDENE CHLORIDE POLYMER COMPOSITIONS

Joachim E. Hartitz, Avon Lake, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Feb. 22, 1977, Ser. No. 770,326
Int. Cl.[2] C08K *3/38, 3/22*
U.S. Cl. 260—45.75 B **8 Claims**

1. A smoke retardant composition comprising
(a) a vinyl chloride or vinylidene chloride polymer,
(b) from about 5 to about 150 weight parts of $Al_2O_3.3H_2O$ per 100 weight parts of polymer, and
(c) from about 0.25 to about 20 weight parts of $Bi_2O_2CO_3$ per 100 weight parts of polymer.

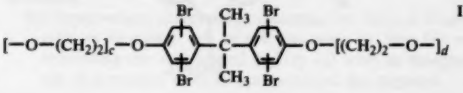
4,143,031

COPOLYESTER COMPOSITIONS FOR THE PRODUCTION OF FIBERS HAVING HIGH HEAT STABILITY AND RESISTANCE TO THE PROPAGATION OF THE FLAME, PROCESS FOR MAKING THE SAME, AND FIBERS MADE FROM SAID COMPOSITIONS

Aldemaro Ciaperoni, Bollate; Giuseppe Quaglia, S. Giorgio su Legnano, and Gino Dall'Asta, Milan, all of Italy, assignors to SNIA Viscosa Societá Nazionale Industria Applicazioni Viscosa S.p.A., Italy

Filed Sep. 30, 1976, Ser. No. 728,206
Claims priority, application Italy, Oct. 8, 1975, 28059 A/75
Int. Cl.[2] C08G *63/18, 63/66, 63/76*
U.S. Cl. 260—45.75 B **30 Claims**

1. Copolyester composition for the production of fibers having high heat stability and resistance to the propagation of the flame, wherein said composition consists essentially of a copolyester formed by the association of the following units:
(I) —OC —R_1—CO—,
wherein R_1 is a benzene nucleus and the two OC groups are indifferently in ortho, meta or para position;
(II) —O[$(CH_2)_a$—O]$_b$—
wherein "a" represents a whole number from 2 to 4 inclusive and "B" represents a whole number from 1 to 3 inclusive;



wherein "C" and "d" each represents, independently the one from the other, a whole number from 1 to 10 inclusive, the said copolymers further comprising —O—Y—O bonds, wherein Y is selected from the group consisting of CO and CO—R_2—CO, wherein R_2 is an aromatic nucleus having at least 3 —COOH functions, said —O—Y—O deriving from a compound which is added at the end of the co-polycondensation, and comprising at least 0.3 percent by weight of a compound of a polyvalent metal selected from the group consisting of antimony, titanium, zinc and zinc borate, the polymer, in its condition of powder or chips or particles, before its transformation to a useable fiber state, has an intrinsic viscosity not lower than 0.55 dl/g. measured in a phenol/tetrachloroethane 60/40 (by weight) solution at 20° C.

4,143,032

HEXAPEPTIDES HAVING ANALGESIC ACTIVITIES

Dimitrois Sarantakis, West Chester, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed Jun. 20, 1977, Ser. No. 807,865
Int. Cl.[2] C07C *103/52;* **A61K** *37/00*
U.S. Cl. 260—112.5 R **1 Claim**

1. The compound L-arginyl-L-tyrosyl-D-alanylglycyl-L-phenylalanyl-D-leucyl amide or a pharmaceutically acceptable salt thereof.

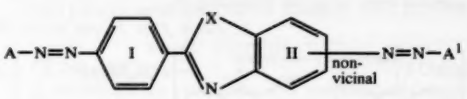
4,143,033

WATER-SOLUBLE DISAZO DYESTUFFS CONTAINING A 2-PHENYL-BENZIMIDAZOLYL,-BENZOXAZOLYL OR-BENZTHIAZOLYL MIDDLE COMPONENT

Wolfgang Bauer, Maintal, and Joachim Ribka, Offenbach am Main, Bürgel, both of Fed. Rep. of Germany, assignors to Cassella Aktiengesellschaft, Frankfurt am Main Fechenheim, Fed. Rep. of Germany

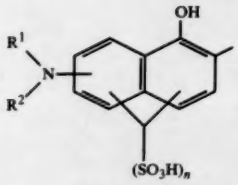
Filed Mar. 16, 1977, Ser. No. 778,049
Claims priority, application Fed. Rep. of Germany, Mar. 24, 1976, 2612454
Int. Cl.[2] C09B *35/34*
U.S. Cl. 260—155 **11 Claims**

1. A water-soluble disazo dye having the structure

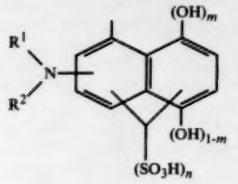


where
X is

—O— or —S—,
R denoting hydrogen, alkyl having up to 4 carbons, phenyl or benzyl,
one of A and A^1 is



or



R^1 and R^2 are identical or different and each is a member selected from the group consisting of hydrogen, alkyl having up to 4 carbons, alkyl carbonyl having 2 to 5 carbons, aryl or aroyl each having 6 to 12 carbons, hydroxyalkyl having 2 to 4 carbons, sulfoalkyl having up to four alkyl carbons and carboxyalkyl having up to four alkyl carbons, with the proviso that only one of R^1 and R^2 can be hydrogen,

n is 1 or 2,

m is 0 or 1,

and the other of A and A^1 is the substituted or unsubstituted radical of a member selected from the group consisting of hydroxybenzene, aminobenzene, amino-hydroxy-benzene, hydroxynaphthalene, N-mono-substituted amino-hydroxy-naphthalene, N,N-disubstituted amino-hydroxy-naphthalene, pyrazolone, 6-hydroxy-2-pyridone, 2,6-diaminopyridine, acetoacetic acid arylamide and dihydroxyquinoline coupling component.

4,143,034

POLYAMINOMETHYLATED MONOAZO AND DISAZO COLORANTS

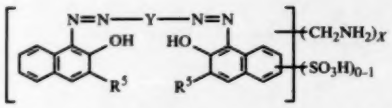
Patrick J. Jefferies, Fort Mitchell, Ky., and Nicholas A. Ambrosiano, Cincinnati, Ohio, assignors to Sterling Drug Inc., New York, N.Y.

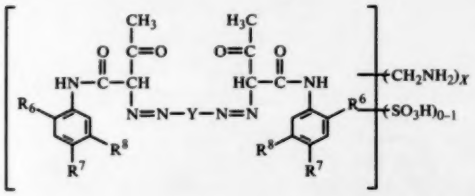
Filed Mar. 9, 1977, Ser. No. 775,935

Int. Cl.[2] **C09B** *35/06, 35/10, 35/30;* **D21H** *1/46*

U.S. Cl. 260—160 **46 Claims**

1. A mixture consisting essentially of a disazo compound which is polyaminomethylated with an average of x aminomethyl groups per molecule wherein said disazo compound is selected from the group consisting of





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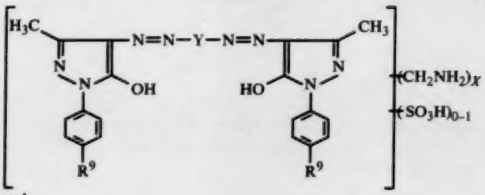
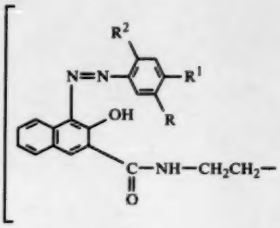
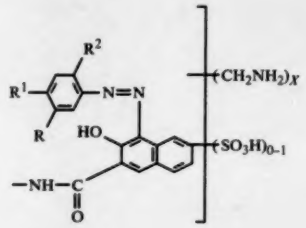


and

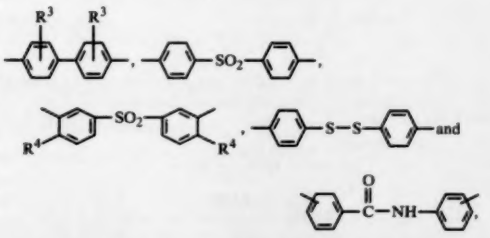




in which

x represents a number from one to eight,

Y represents a moiety selected from the class having the formulas



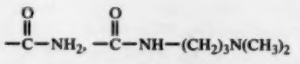
R represents hydrogen, C_1 to C_3 alkyl, C_1 to C_3 alkoxy or N-phenylsulfamoyl,

R^1 represents hydrogen, C_1 to C_3 alkyl, C_1 to C_3 alkoxy, halo, N-phenylsulfamoyl or 6-methylbenzothiazol-2-yl,

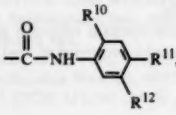
R^2, R^3, R^6, R^7, R^8, R^{10}, R^{11} and R^{12} represent hydrogen, C_1 to C_3 alkyl, C_1 to C_3 alkoxy or halo,

R^4 represents hydrogen, C_1 to C_3 alkyl or C_1 to C_3 alkoxy,

R^5 represents hydrogen or a moiety selected from



and



and

R^9 represents hydrogen or C_1 to C_3 alkyl; or the acid-addition salt forms of said mixtures.

4,143,035

DISAZO DYESTUFFS HAVING AN ALKOXY GROUP ON THE FIRST AND/OR SECOND COMPONENT

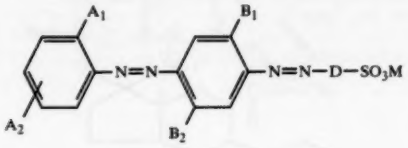
Hans A. Stingl, Toms River, N.J., assignor to Toms River Chemical Corporation, Toms River, N.J.

Continuation of Ser. No. 489,865, Jul. 19, 1974, abandoned, which is a continuation of Ser. No. 123,443, Mar. 11, 1971, abandoned. This application Jun. 7, 1976, Ser. No. 693,593

Int. Cl.[2] C09B *31/04, 31/06, 31/08*

U.S. Cl. 260—191 **1 Claim**

1. A compound of the formula



wherein

A_1 is hydrogen or methoxy,

A_2, B_1 and B_2 are independently hydrogen, methyl or methoxy, and

D-SO_3M is 1-hydroxy-4-sulfo-2-naphthyl,
2-hydroxy-6-sulfo-1-naphthyl,
2-amino-6-sulfo-1-naphthyl, or
2-amino-8-hydroxy-6-sulfo-1-naphthyl,

wherein M is hydrogen, alkali metal or ammonium,

provided that at least one of A_1, A_2, B_1 and B_2 is methoxy, and no more than one of A_2, B_1 and B_2 is methyl, and further provided that when one of A_2, B_1 or B_2 is methyl, that said methyl be para to a methoxy group.

4,143,036

PROCESS FOR PREPARING METALIZED AZO PIGMENTS

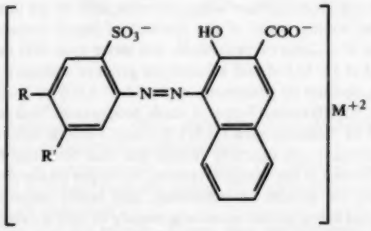
Ernest A. Stefancsik, Flemington, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 31, 1977, Ser. No. 764,234

Int. Cl.[2] C09B *29/10, 63/00*

U.S. Cl. 260—202 **3 Claims**

1. In a process for preparing metalized azo pigment of the general formula



wherein R and R' are selected from CH_3 and Cl and one of R and R' must be CH_3, and where M is selected from at least one of calcium and strontium by the steps of (i) diazotizing one of 2-chloro-5-amino-toluene-4-sulfonic acid and 2-chloro-4-amino-toluene-5-sulfonic acid, (ii) coupling the diazo of Step (i) with 3-hydroxy-2-naphthoic acid to form an azo, and (iii) forming the metalized azo pigment by contacting azo formed in Step (ii) with an inorganic salt of at least one of calcium and strontium,

the improvement comprising contacting the diazo of Step (i) with an inorganic salt of calcium prior to Step (ii) and contacting the azo formed in Step (ii) with an inorganic salt of strontium to form the metalized azo pigment.

4,143,037

THIOHYDRAZOAZETIDINONES

Maurizio Foglio; Giovanni Franceschi; Paolo Masi, and Antonino Suarato, all of Milan, Italy, assignors to Societa' Farmaceutici Italia S.p.A., Milan, Italy

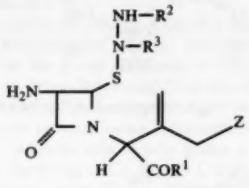
Division of Ser. No. 735,973, Oct. 27, 1976, abandoned, which is a division of Ser. No. 586,376, Jun. 12, 1975, Pat. No. 4,012,381. This application May 16, 1977, Ser. No. 797,608

Claims priority, application Italy, Jun. 12, 1974, 23887 A/74

Int. Cl.[2] C07D *205/08*

U.S. Cl. 260—239 A **5 Claims**

1. 2β-thiohydrazoazetidinones of structure:



(IV')

where R^1 is selected from the class consisting of hydroxyl, alkoxy having from 1 to 4 carbon atoms, trichloroethoxy, benzyloxy, p-methoxybenzyloxy, p-nitrobenzyloxy, benzhydryloxy, triphenylmethoxy, phenacyloxy, and p-halophenacyloxy;

z is selected from the class consisting of hydrogen, —O—alkyl, —Br, —I, —O—CO—CH_3; and

R^2 and R^3 are equal or different and represent the radical —$COOR^4$ wherein R_4 is a lower alkyl having from 1 to 4 carbon atoms.

4,143,038

CEPHALOSPORIN ANALOGUES

Masayuki Narisada, Ibaraki; Hiroshi Onoue, Osaka; Teruji Tsuji, Ibaraki; Yasuhiro Nishitani, Izumi; Mitsuru Yoshioka, Toyonaka; Yoshio Hamashima, Kyoto, and Wataru Nagata, Nishinomiya, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

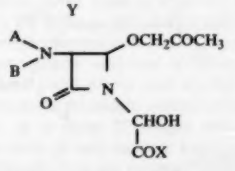
Division of Ser. No. 741,485, Nov. 12, 1976, abandoned. This application Oct. 26, 1977, Ser. No. 846,503

Claims priority, application United Kingdom, Nov. 12, 1975, 46759/75; Dec. 4, 1975, 49891/75

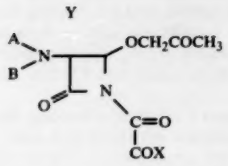
Int. Cl.[2] C07D *205/00*

U.S. Cl. 260—239 A **2 Claims**

1. A process for the production of a compound of the formula



which comprises subjecting a compound of the formula

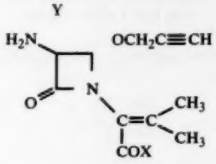


to reduction with at least one equivalent of zinc in acetic acid solvent in the presence or absence of an organic solvent, wherein, in said formulas,

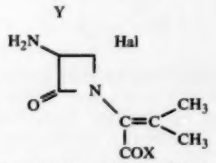
A and B each represents hydrogen or an amino-protecting group,

X is hydroxy or a carboxy-protecting group and Y is hydrogen or methoxy.

2. A process for the production of a compound of the formula



which comprises reacting a compound of the formula



with a compound of the formula $HOCH_2C{\equiv}CH$ in the presence of a halide trapping agent, wherein, in said formulas X represents hydroxy or a carboxy-protecting group, Y represents hydrogen or methoxy and Hal represents a halogen atom.

4,143,039

ANTIBACTERIAL 3-(5-TETRAZOLYL)PENAM COMPOUNDS

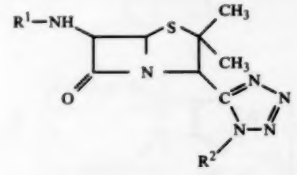
Wayne E. Barth, East Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 561,147, Mar. 24, 1975, which is a continuation-in-part of Ser. No. 491,510, Jul. 24, 1974, abandoned, which is a continuation-in-part of Ser. No. 450,435, Mar. 12, 1974, abandoned, which is a continuation-in-part of Ser. No. 407,097, Oct. 17, 1973, abandoned. This application Apr. 12, 1977, Ser. No. 786,817

Int. Cl.[2] C07D *499/28, 499/44*

U.S. Cl. 260—239.1 **19 Claims**

1. A compound of the formula



and the salts thereof;

wherein R^1 as an acyl group of an organic carboxylic acid or the acyl group of an acyl derivative selected from the group consisting of esters, amides and chlorides of organic carboxylic acids;

and R^2 is a tetrazolylpenam nitrogen protecting group removable from said compound of said formula.

4,143,040

PROCESS FOR PRODUCING 17-ACETALS OF 3-ALKOXYESTRA-2,5 (10)-DIEN-17-ONES

Tadashi Oohama, Tokyo; Ryozo Yamaguchi, Yokohama, and Mamoru Sugano, Kawasaki, all of Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

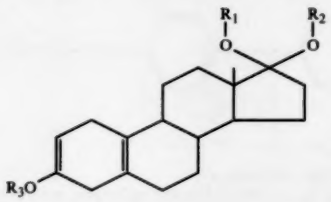
Filed Nov. 21, 1977, Ser. No. 853,424

Claims priority, application Japan, Dec. 7, 1976, 51/146835

Int. Cl.[2] C07J *17/00*

U.S. Cl. 260—239.55 C **22 Claims**

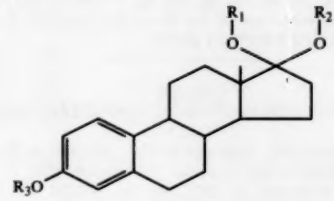
1. In a process for producing a 17-ketal of 3-alkoxy estra-2,5(10)-dien-17-one having the formula (I):



(I)

wherein R_1 and R_2 when considered separately are C_1-C_{10} alkyl; R_1 and R_2 when taken together are C_2-C_{10} alkylene; and R_3 is C_1-C_{10} alkyl,

which comprises reacting a 17-ketal of 3-alkoxyestra-1,3,5(10-trien-17-one having the formula (II):



(II)

wherein R_1, R_2 and R_3 are as defined above, with sodiumor potassium, liquid ammonia and a tertiary alcohol in the presence of a solvent selected from the group consisting of tetrahydrofuran, dioxane and tetrahydropyran, the improvement which comprises using not more than 90 ml (measured at the boiling point of the system) of liquid ammonia per gram of sodium or potassium, not more than 100 ml (measured at 15° C.) of said solvent per gram of sodium or potassium, sodium or potassium, and said 17-ketal of 3-alkoxyestra-1,3,5(10)-trien-17-one in such proportions that said 17-ketal of 3-alkoxyestra-1,3,5(10)-trien-17-one is substantially dissolved in the reaction system and that two liquid phases are formed in the reaction system, the upper phase consisting mainly of sodium or potassium, and liquid ammonia, the colored lower phase consisting mainly of said solvent, liquid ammonia and said 17-ketal of 3-alkoxyestra-1,3,5(10)-trien-17-one, and effecting said reaction in the presence of at least one of an alicyclic hydrocarbon and an aliphatic hydrocarbon.

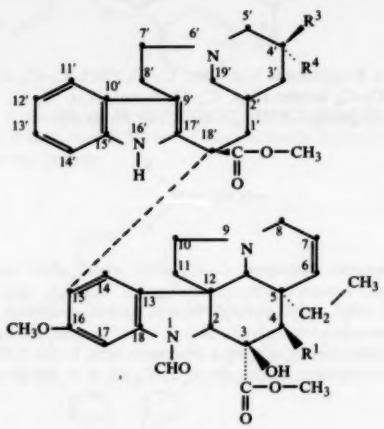
4,143,041

4'-DEOXYVINCRISTINE AND RELATED COMPOUNDS

Gerald L. Thompson, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 760,595, Jan. 19, 1977, abandoned. This application Nov. 25, 1977, Ser. No. 853,979
Int. Cl.[2] C07D *519/04*; A61K *31/475*
U.S. Cl. 260—244.4 10 Claims

1. A compound of the formula



wherein R^1 is OH or acetoxy and one of R^3 and R^4 is hydrogen and the other is ethyl, and pharmaceutically-acceptable salts thereof formed with non-toxic acids.

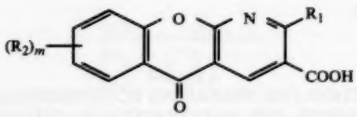
4,143,042

1-AZAXANTHONE-3-CARBOXYLIC ACIDS

Akira Nohara, Kyoto; Hirosada Sugihara, and Kiyoshi Ukawa, both of Osaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Feb. 27, 1978, Ser. No. 881,237
Claims priority, application Japan, Mar. 8, 1977, 52-25654; Mar. 8, 1977, 52-25655; Dec. 20, 1977, 52-153898
Int. Cl.[2] C07D *491/04*
U.S. Cl. 546—89 58 Claims

1. A compound of the formula:



wherein

m is 0, 1 or 2;

R_1 is hydrogen, C_{1-6} alkyl, phenyl, carboxy hydroxy, C_{1-4} alkoxy, amino or C_{1-3} alkylamino;

each R_2 is independently C_{1-6} alkyl, C_{1-4} alkoxy, halogen, nitro, hydroxy, carboxy, amino, C_{1-3} alkylamino or di(C_{1-3} alkyl) amino; or

when m is 2 the two R_2 groups may be independently as defined above or may form together with adjacent ring carbon atoms the butadienylene group,

or a physiologically acceptable salt thereof.

4,143,043

3,5-BIS(CHLOROMETHYLTHIO)-4-CYANOISOTHIAZOLE

Christian T. Goralski, Midland, and George A. Burk, Bay City, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 726,346, Sep. 24, 1976, Pat. No. 4,094,880. This application Feb. 24, 1978, Ser. No. 881,089
Int. Cl.[2] C07D *275/00*
U.S. Cl. 260—302 S 1 Claim

1. The compound 3,5-bis(chloromethylthio)-4-cyanoisothiazole.

4,143,044

PROCESS FOR MAKING SELECTED 3-TRIHALOMETHYL-5-LOWER ALKOXY-1,2,4-THIADIAZOLES

Eugene F. Rothgery, North Branford, and Hans Juergen A. Schroeder, Hamden, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Apr. 5, 1978, Ser. No. 893,550
Int. Cl.[2] C07D *285/08*
U.S. Cl. 260—302 D 10 Claims

1. A process for producing selected 3-trihalomethyl-5-lower alkoxy-1,2,4-thiadiazoles wherein said trihalomethyl group is selected from the group consisting of CCl_3 and CF_3 and said lower alkoxy group is selected from an alkoxy group having from 1 to 4 carbon atoms comprising

reacting the corresponding N-halotrihaloacetamidine compound, wherein said N-halo group is selected from the group consisting of Cl, Br and I, with the corresponding alkali metal lower alkyl xanthate salt, wherein said alkali metal is selected from the group consisting of sodium and potassium.

4,143,045

METHOD OF PREPARING DIBENZOTHIAZOLYL DISULFIDES

James J. Tazuma, Stow, and Angelo Bergomi, Akron, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 637,243, Dec. 3, 1975, abandoned, which is a continuation of Ser. No. 504,018, Sep. 9, 1974, abandoned, which is a continuation of Ser. No. 301,691, Oct. 27, 1972, abandoned. This application Nov. 17, 1977, Ser. No. 852,400
Int. Cl.[2] C07D *277/78*
U.S. Cl. 260—306.5 1 Claim

1. A method of preparing dibenzothiazolyl disulfide having a melting point of about 180° C. as determined with a capillary tube with a heating rate of about 1° C. per minute, in a yield of at least about 98 percent without the aid of a mineral acid where the byproducts are water and dimethylphenylcarbinol instead of inorganic salt byproducts, which method consists of oxidizing mercaptobenzothiazole in a solution of alcohol selected from at least one of methyl alcohol and isopropyl alcohol at a temperature in the range of about 30° C. to about 80° C., but not above the boiling point of said alcohol solution, by reacting cumene hydroperoxide therewith; where said alcohol solution has an autogenous acid-base condition developed by the reaction system itself, where said alcohol solution comprises from 100 to about 80 weight percent of said alcohol and correspondingly up to about 20 weight percent water, and where the mole ratio of said cumene hydroperoxide to said mercaptobenzothiazole is in the range of about 0.3:1 to about 0.7:1.

4,143,046

CARBON AND OXYGEN ANALOGS OF PENICILLIN

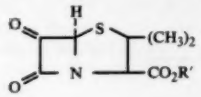
John C. Sheehan, Lexington, and Young S. Lo, Boston, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 347,772, Apr. 4, 1973, abandoned. This application Mar. 21, 1977, Ser. No. 779,828

Int. Cl.[2] C07D *277/04*

U.S. Cl. 260—306.7 C 8 Claims

1. A compound having the formula:



where R′ is hydrogen or a pharmaceutically acceptable protective group.

4,143,047

2-SULFINYL AND 2-SULFONYL OXAZOLES

Roger G. Harrison, Farnborough, England, assignor to Lilly Industries Limited, London, United Kingdom

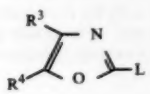
Division of Ser. No. 690,218, May 26, 1976, abandoned. This application Sep. 26, 1977, Ser. No. 836,284

Claims priority, application United Kingdom, Jun. 7, 1975, 24552/75

Int. Cl.[2] C07D *263/46*

U.S. Cl. 260—307 R 3 Claims

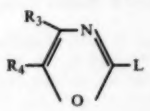
1. A compound of formula (III):



(III)

wherein R^3 and R^4 are independently selected from hydrogen, hydroxy, C_{1-4} hydroxyalkyl, C_{1-4} alkyl, C_{3-8} cycloalkyl, C_{3-6} acyloxyalkyl and phenyl optionally substituted by a halogen atom and wherein L is a group of formula —SOR or $-SO_2R$ where R is benzyl or phenyl.

3. A compound of the formula



wherein R^3 and R^4 are independently selected from hydroxy, C_{1-4} hydroxyalkyl, C_{3-8} cycloalkyl and C_{3-6} acyloxyalkyl, and wherein L is a group of the formula —SOR or $-SO_2R$ where R is C_{1-8} alkyl, C_{3-8} cycloalkyl, benzyl or phenyl.

4,143,048

PROCESS FOR PRODUCING TRIAZOLYLBENZOPHENONE DERIVATIVES

Kentaro Hirai, Kyoto; Toshio Fujishita, Nishinomiya; Teruyuki Ishiba, Takatsuki, and Hirohiko Sugimoto, Ikeda, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

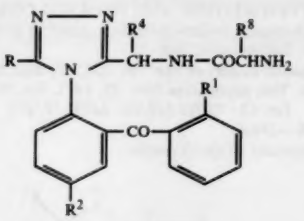
Division of Ser. No. 722,670, Sep. 13, 1976, abandoned, which is a continuation of Ser. No. 718,934, Aug. 30, 1976, abandoned. This application Dec. 15, 1977, Ser. No. 861,009

Claims priority, application United Kingdom, Dec. 30, 1975, 53224/75

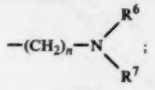
Int. Cl.[2] C07D *249/14*

U.S. Cl. 260—308 R 4 Claims

1. A process for preparing a compound of the formula:



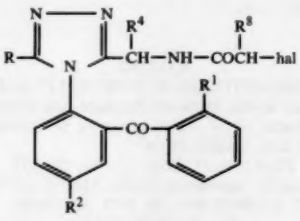
wherein R represents hydrogen, C_1–C_6 alkyl, C_1–C_6 chloroalkyl, C_1–C_6 bromo-alkyl, C_1–C_6 fluoro-alkyl, C_1–C_6 iodoalkyl, the group $-(CH_2)_n-X-R^5$, or the group



R^5 represents hydrogen, C_1–C_6 alkyl, vinyl, allyl, butenyl, pentenyl, hexenyl, ethynyl, propynyl, butynyl, pentynyl, phenyl, tolyl, xylyl, pyridyl, formyl, acetyl, propionyl, benzoyl, carbobenzoxy, glycyl, alanyl, leucyl or phenylalanyl; X represents sulfur or oxygen; *n* represents zero, 1, 2 or 3; R^6 and R^7 each represents hydrogen or C_1–C_6 alkyl; or the group

represents pyrrolidino; R^1 represents hydrogen or halogen; R^2 represents halogen, nitro, or trifluoromethyl; R^4 and R^8 each represents hydrogen, C_1–C_6 alkyl, or C_7–C_{10} aralkyl,

which comprises reacting a halogeno derivative of the formula:



wherein hal represents halogen and R, R^1, R^2, R^4 and R^8 each is as defined above

with ammonia or hexamethylenetetramine in an inert solvent.

4,143,049

METHOD FOR PREPARING 2H-TETRAZOLIUM CHLORIDE AND 2H-TETRAZOLIUM CHLORIDE HYDROCHLORIDE

Vera M. Ostrovskaya, Izumrudnaya ulitsa, 24, korpus 2, kv. 31; Olga T. Lushina, Komsomolsky prospekt, 5/2, kv. 33; Vladimir M. Dziomko, Boitsovaya ulitsa, 21, korpus 1, kv. 75, and Julia A. Davydovskaya, Sevanskaya ulitsa, 21, korpus 1, kv. 35, all of Moscow, U.S.S.R.

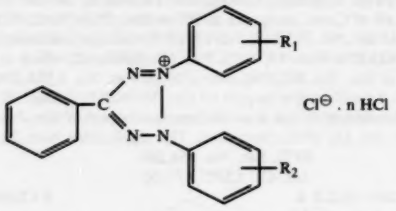
Filed Dec. 6, 1976, Ser. No. 747,617

Int. Cl.[2] C07D *257/04*; A01N *9/12*

U.S. Cl. 260—308 D 6 Claims

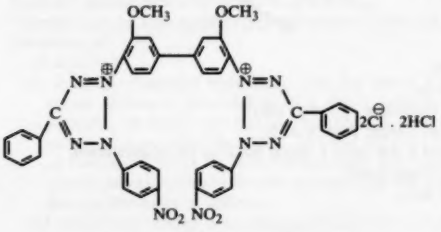
1. In a method for preparing 2H-tetrazolium chloride and 2H-tetrazolium chloride hydrochloride having the general formula

(I)



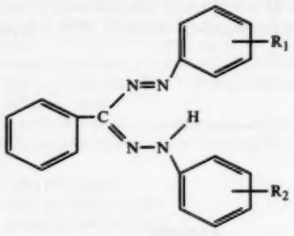
where R_1 and R_2 are H, OH, NO_2, Cl, or OCH_2COOH, and n is from 0 to 3, and di-2H-tetrazolium chloride hydrochoride, having the formula

(II).



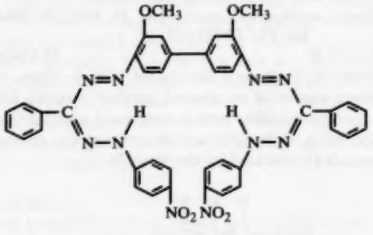
wherein formazans having the formula

(III)



where R_1 and R_2 are as specified above, and respectively, having the formula

(IV)



are oxidized, the improvements which comprise oxidizing with gaseous chlorine in a medium of a polar organic solvent at a temperature from −5 to +20° C.; and a molar ratio of formazan to chlorine being from 1:1 to 1:10; when the oxidation process is over, the end product is isolated.

4,143,050

MANUFACTURE OF 3-HALOSULFONYLTHIOPHENE-CARBOXYLIC ACID COMPOUNDS

Phillip A. Rossy, Ludwigshafen; Werner Hoffmann, Neuhofen, and Norbert Mueller, Mutterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Dec. 23, 1977, Ser. No. 863,913

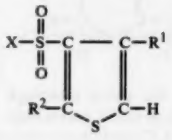
Claims priority, application Fed. Rep. of Germany, Jan. 5, 1977, 2700261; Apr. 20, 1977, 2717477

Int. Cl.[2] C07D *333/24*

U.S. Cl. 260—332.2 C **14 Claims**

1. A process for the manufacture of a 3-halosulfonylthiophene-carboxylic acid compounds of the formula

I



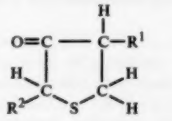
where R^1 is

or hydrogen, R^2 is hydrogen if R^1 is

or R^2 is

if R^1 is hydrogen, R^3 is an aliphatic radical or hydrogen and X is halogen, wherein, in a first step, a 3-ketothiophane-carboxylic acid compound of the formula

II

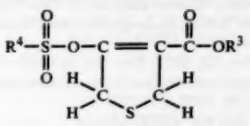


where R^1 and R^2 have the above meanings, is reacted with a sulfonic acid compound of the formula

$$R^4-SO_2Y \qquad \text{III}$$

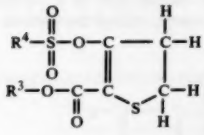
where R^4 is an aliphatic or aromatic radical, Y is halogen or $-OR^3$ or

and R^3 has the above meaning, and the resulting 3-sulfato-dihydrothiophene-carboxylic acid compound of the formula



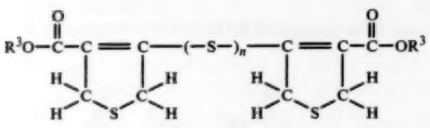
IVa

or



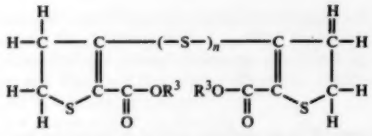
IVb

where R^3 and R^4 have the above meanings, is reacted, in a second step, with an alkali metal polysulfide, whereupon the resulting polysulfido-(3,3')-bis-[dihydrothiophene-carboxylic acid compound] of the formula



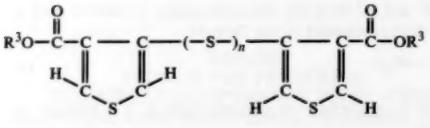
Va

or



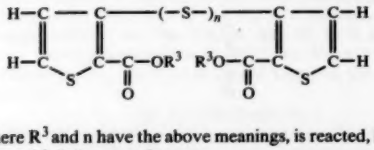
Vb

where R^3 has the above meaning and n is 2 or an integer greater than 2, is reacted in a third step with a chloride or bromide of sulfuric acid or with chlorine and the resulting polysulfido-(3,3')-bis-[thiophene-carboxylic acid compound] of the formula



VIa

or



VIb

where R^3 and n have the above meanings, is reacted, in a fourth step, with halogen and water.

4,143,051

15-SUBSTITUTED-ω-PENTANORPROSTAGLANDINS

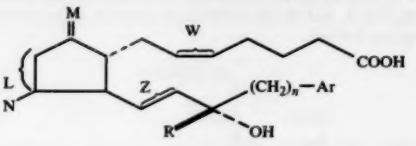
Hans-Jurgen E. Hess, Old Lyme; Michael R. Johnson, Gales Ferry; Jasjit S. Bindra, Groton, and Thomas K. Schaaf, Old Lyme, all of Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 705,768, Jul. 15, 1976, which is a division of Ser. No. 633,374, Nov. 19, 1975, Pat. No. 3,980,642, which is a division of Ser. No. 485,596, Jul. 3, 1974, Pat. No. 3,956,284, which is a continuation-in-part of Ser. No. 425,517, Dec. 17, 1973, abandoned, which is a continuation-in-part of Ser. No. 271,220, Jul. 13, 1972, abandoned. This application Nov. 23, 1977, Ser. No. 854,269

Int. Cl.[2] C07C *177/00*

U.S. Cl. 260—332.2 A **9 Claims**

1. A compound of the structure:



wherein

Ar is pr

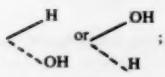
R is hydrogen or lower alkyl;

n is an integer from 0 to 5;

W and L are each a single bond or cis double bond;

Z is single bond

M is keto,



N is hydrogen or

and wherein L, M and N are so selected as to complete the structure of a prostaglandin of the A, E or F series.

4,143,052

PROCESS FOR PREPARING THIOPHENES

Joël Barrault, Liguge; Michel Guisnet, Poitiers; Jacques Lucien, Le Mesnil Esnard, and Raymond Maurel, Jaunay Clan, all of France, assignors to Societe Nationale Elf Aquitaine (Production), Paris, France

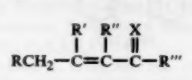
Filed Dec. 15, 1977, Ser. No. 860,828

Claims priority, application France, Dec. 23, 1976, 76 38842

Int. Cl.[2] C07D *333/10*

U.S. Cl. 260—329 R **15 Claims**

1. A method for preparing thiophenes, which comprises reacting in the presence of an alumina catalyst between 250° and 500° C. hydrogen sulfide with a compound selected from the group consisting of the unsaturated carbonyl and thiocarbonyl compounds represented by the formula



where X is O or S while each of the symbols R, R', R'' and R''' is hydrogen or lower alkyl, or ortho-tolualdehyde or phenylacetaldehyde, then condensing the reaction mixture and separating the thiophene formed.

4,143,053

4-HYDROXY-3(2'-HYDROXYACETYL)-6-OXOHEX-ANOIC ACID DERIVATIVES

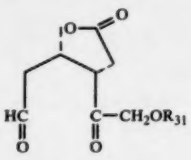
Norman A. Nelson, Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 676,893, Apr. 14, 1976, Pat. No. 4,048,194. This application May 12, 1977, Ser. No. 796,097

Int. Cl.[2] C07D *307/32*

U.S. Cl. 260—343.6 **2 Claims**

1. A thromboxane intermediate of the formula



wherein R_{31} is a hydroxy-hydrogen replacing group selected from the group consisting of R_9, R_{10}, and R_{34};

wherein R_9 is an acyl protecting group selected from the group consisting of

(a) benzoyl;

(b) benzoyl substituted with one to 5 alkyl of one to 4 carbon atoms, inclusive, phenylalkyl of 7 to 12 carbon atoms, inclusive, or nitro, with the proviso that not more than 2 substituents are other than alkyl, and that the total number of carbon atoms in the substituents does not exceed 10 carbon atoms, with the further proviso that the substituents are the same or different.

(c) benzoyl substituted with alkoxycarbonyl of 2 to 5 carbon atoms, inclusive;

(d) naphthoyl;

(e) naphthoyl substituted with one to 9, inclusive, alkyl of one to 4 carbon atoms, inclusive, phenylalkyl of 7 to 10 carbon atoms, inclusive, or nitro, with the proviso that not more than 2 substituents on either of the fused aromatic rings are other than alkyl and that the total number of carbon atoms in the substituents on either of the fused aromatic rings does not exceed 10 carbon atoms, with the further proviso that the various substituents are the same or different; and

(f) alkanoyl of 2 to 12 carbon atoms, inclusive;

wherein R_{10} is a blocking group selected from the group consisting of

(a) tetrahydropyranyl;

(b) tetrahydrofuranyl; and

(c) a group of the formula

$$-C(OR_{11})(R_{12})-CH(R_{13})(R_{14}),$$

wherein R_{11} is alkyl of one to 18 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl or phenyl substituted with one to 3 alkyl of one to 4 carbon atoms, inclusive, wherein R_{12} and R_{13} are alkyl of one to 4 carbon atoms, inclusive, phenyl, phenyl substituted with one, 2, or 3 alkyl of one to 4 carbon atoms, inclusive, or when R_{12} and R_{13} are taken together $-(CH_2)_a-$ or $-(CH_2)_b-O-(CH_2)_c$, wherein a is 3, 4, or 5, and b is one, 2, or 3, and c is one, 2, or 3, with the proviso that R_{12} and R_{13} may be the same or different, and wherein R_{14} is hydrogen or phenyl; wherein R_{34} is an arylmethyl hydroxy-hydrogen replacing group selected from the group consisting of

(a) benzyl,

(b) benzyl substituted by one to five alkyl of one to 4 carbon atoms, inclusive, chloro, bromo, iodo, fluoro, nitro, phenylalkyl of 7 to 12 carbon atoms, inclusive, with the further proviso that the various substituents are the same or different,

(c) benzhydryl,

(d) benzhydryl substituted by one to 10 alkyl of one to 4 carbon atoms, inclusve, chloro, bromo, iodo, fluoro, nitro, phenylalkyl of 7 to 12 carbon atoms, inclusive,

(e) trityl, and

(f) trityl substituted by one to 15 alkyl of one to 4 carbon atoms, inclusive, chloro, bromo, iodo, fluoro, nitro, phenylalkyl of 7 to 12 carbon atoms, inclusive.

4,143,054

7-OXABICYCLOHEPTANE- AND 7-OXADICYCLOHEPTENE COMPOUNDS

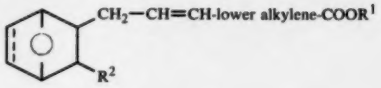
Peter W. Sprague, Pennington, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Nov. 4, 1977, Ser. No. 848,543

Int. Cl.[2] C07D *307/00*

U.S. Cl. 260—346.22 **7 Claims**

1. A compound of the formula



wherein

R^1 is hydrogen or lower alkyl;

R^2 is —CHO, $-CH_2OH$ or $-CH{=}CH-R^3$—lower alkylene-CH_3;

R^3 is keto or hydroxymethyl; and the dotted line is an optional double bond;

said lower alkyl and lower alkylene groups having up to seven carbon atoms.

4,143,055

2,4,6-TRISUBSTITUTED-2,3-DIHYDRO-BENZOFURAN DERIVATIVES

Emilio Occelli, Parabiago, Italy, assignor to Gruppo Lepetit S.p.A., Milan, Italy

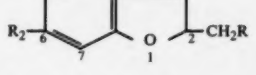
Filed Mar. 27, 1978, Ser. No. 890,158

Int. Cl.[2] C07D *307/79*

U.S. Cl. 260—346.73 **4 Claims**

1. A 2,4,6-trisubstituted-2,3-dihydro-benzofuran derivative of the following formula

I



wherein R is selected from hydrogen or methyl; one of R_1 and R_2 represents hydroxy, (C_{1-4})alkoxy or (C_{2-4})alkanoyloxy, and the other one is selected from cyano, carboxy, carbo(C_{1-4})alkoxy, carbamoyl and a $-NR_3R_4$ group, wherein R_3 and R_4 independently represent hydrogen, (C_{1-4})alkyl, (C_{2-4})alkanoyl, carbo(C_{1-4})alkoxy, carbobenzyloxy, carbamoyl, mono- and di-(C_{1-4})alkylamino-(C_{1-4})alkyl, benzenesulfonyl, toluenesulfonyl, (C_{1-4})alkylsulfonyl or phenacylsulfonyl: and salts therewith of pharmaceutically acceptable acids.

4,143,056

MALEIC ANHYDRIDE PRODUCTION USING THALLIUM-VANADIUM MODIFIED PHOSPHOTUNGSTIC CATALYSTS

S. Erik Pedersen, Havertown, Pa., and Ming N. Sheng, Cherry Hill, N.J., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Nov. 21, 1977, Ser. No. 853,970

Int. Cl.[2] C07D *307/60*

U.S. Cl. 260—346.75 **3 Claims**

1. In the method for the production of an effluent stream

containing maleic anhydride, said method using a feed gas stream comprising a major amount of carrier gas, a controlled amount of oxygen, and a controlled amount of an unsaturated aliphatic normal hydrocarbon containing at least 4 carbon atoms, the proportions of oxygen and hydrocarbon providing in said feed gas stream a non-explosive mixture at reaction conditions, and said feed gas stream is converted at a temperature from 250° C to 650° C in a catalytic zone to form an effluent stream containing maleic anhydride, the improvement which consists of:

employing as the catalyst in said catalytic zone a catalyst having as active ingredients the oxides of tungsten, phosphorus, thallium and vanadium, said catalyst being a phosphotungstic catalyst modified by minor amounts of thallium oxide and vanadium oxide, the sum of the oxides of Tl and V constituting from 1% to 15% by weight of the catalyst, the atom ratio of Tl:V being within the range from about 2:1 to about 8:1, and the overall atomic ratio's are such that Tl:V correspond to 1:0.1–0.7:0.01–0.16:0.-01–0.1.

4,143,057

COORDINATION COMPLEXES AS CATALYSTS

Kurt Weinberg, Upper Saddle River, N.J., and Gordon C. Johnson, Armonk, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Feb. 28, 1977, Ser. No. 773,001

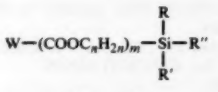
Int. Cl.[2] C07F *7/30, 7/28, 7/22, 7/00*

U.S. Cl. 260—429 R **15 Claims**

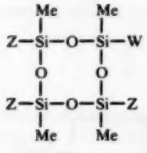
1. A coordination complex of:

(A) a metal halide of a metal selected from the group consisting of titanium, zirconium, zinc, germanium, tin, lead, antimony and bismuth; and

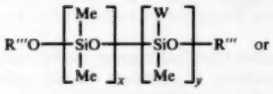
(B) a silicon compound selected from the group consisting of:



(I)



(II)

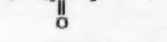


(III)

$$QCH_2CH_2SiR_3^{**} \quad \text{(IV)}$$

wherein

W is $CH_2{=}CX-$ or



X is hydrogen or methyl and is methyl only when m is one;

R* is alkyl or haloalkyl having from 1 to 4 carbon atoms;

R** is methyl, ethyl, butyl, methoxy, ethoxy or butoxy;

R is methyl, ethyl, butyl, methoxy, ethoxy, butoxy or trimethylsiloxy;

R′ is methyl, methoxy, ethoxy, butoxy or trimethylsiloxy;

R″ is methoxy, ethoxy, butoxy, trimethylsiloxy or vinyldimethylsiloxy;

R‴ is methyl, ethyl, butyl or trimethylsilyl;

Me is methyl;

Z is methyl or W;

Q is NH_2CH_2-, $NH_2CH_2CH_2NHCH_2-$, NC—, HS— or $HSCH_2CH_2S-$ group;

n is an integer having a value of from 2 to 5;

m is an integer having a value of zero or one;

x is an integer having a value of from 1 to 100; and

y is an integer having a value of from 1 to 100;

wherein the mole ratio of A:B in said coordination complex is from 1:1 to 1:7.

4,143,058

PROCESS FOR PRODUCTION OF AN AZOMETHINE PIGMENT

James M. McCrae, Stewarton; Alexander M. Irvine, Dean Park; Ian A. Macpherson, Paisley, all of United Kingdom, and Vincent J. Cavalieri, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 1, 1977, Ser. No. 820,510

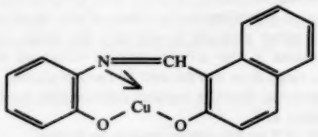
Claims priority, application United Kingdom, Aug. 5, 1976, 32617/76

Int. Cl.[2] C07F *1/08*

U.S. Cl. 260—438.1 **9 Claims**

1. A process for the production of a complex metal compound of the formula

I

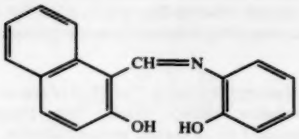


in pigmentary form having a mean particle size not exceeding 0.3 microns, comprising

(a) reacting β-naphthol with chloroform in an alkaline medium to form the 2-hydroxy-1-naphthaldehyde by adding β-naphthol to an aqueous alcoholic alkaline medium at a temperature within the range of from 70° to 100° C. to form a brown emulsion thereof; slowly adding chloroform to said brown emulsion at 70° to 100° C. until the reaction mixture assumes a blue coloration; halting the addition of chloroform until the blue coloration changes to green; and adding the remaining chloroform at a sufficiently slow rate that the green coloration is maintained;

(b) reacting the alkali metal salt of 2-hydroxy-10-naphthaldehyde from step (a) with 2-aminophenol to produce a ligand of the formula

II



(c) metallising the ligand of formula II with an aqueous solution of coppering agent, and isolating said complex metal compound.

4,143,059
PROCESS FOR PREPARING ALUMINUM ETHYL PHOSPHITE

Jean Abblard, Saint Didier Au Mont D'Or; Michel Ghazarian, Décines, and René Viricel, Lyon, all of France, assignors to Philagro S.A., Lyon, France

Filed Nov. 15, 1977, Ser. No. 851,794

Claims priority, application France, Nov. 16, 1976, 76 35268; Sep. 7, 1977, 77 27668

Int. Cl.² C07F *5/06*

U.S. Cl. 260—448 R **15 Claims**

1. A process for manufacturing aluminum ethyl phosphite which comprises reacting an excess of a ternary mixture in equilibrium of, in mols:

23 to 93% diethyl phosphite,

59 to 7% monoethyl phosphite,

18 to 0.1% phosphoric acid

with alumina at a temperature between 20° and 100° C., at subatmospheric pressure, the water resulting from the reaction being simultaneously eliminated as it is formed.

4,143,060
PROCESS FOR THE PREPARATION OF SILYL SUBSTITUTED UREA DERIVATIVES

Kuno Wagner, Leverkusen; Günter Oertel, Cologne, both of Fed. Rep. of Germany; Hans D. Gölitz, deceased, late of Mettmann, Fed. Rep. of Germany (by Ingrid I. K. Golitz, heiress), and Bernd Quiring, Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

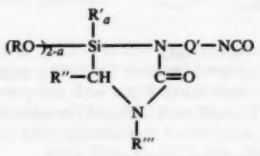
Continuation-in-part of Ser. No. 303,183, Nov. 2, 1972, abandoned. This application Dec. 23, 1974, Ser. No. 535,537

Claims priority, application Fed. Rep. of Germany, Nov. 6, 1971, 2155260

Int. Cl.² C07F *7/02, 7/07*

U.S. Cl. 260—448.2 N **7 Claims**

1. A process for the preparation of a silyl substituted urea derivative solution comprising reacting (A) an isocyanate of the formula



wherein

R represents a C_1–C_{18} alkyl group, a C_4–C_{14} cycloalkyl group or a phenyl group,

R′ represents an optionally halogenated or cyano-substituted C_1–C_{10} alkyl, C_4–C_{10} cycloalkyl or C_6–C_{10} aryl group,

R″ represents a hydrogen atom, a methyl group or a phenyl group,

R‴ represents a hydrogen atom or an optionally halogenated or cyano-substituted C_1–C_{18} alkyl, C_4–C_{14} cycloalkyl or C_6–C_{14} aryl group,

Q′ represents a divalent alkyl group containing 4 to 12 carbon atoms or a divalent C_4–C_{14} cycloalkyl, C_7–C_{15} aralkyl, C_6–C_{14} aryl or C_8 alkylaryl group,

a = 0 or 1,

with a compound of the formula:

$$Q(XH)_c$$

wherein

Q represents a c-valent radical derived by the removal of c-XH groups from compounds with a molecular weight of 4000 to 80,000 which contains urea and urethane groups and in addition thereto, contains groups selected from the group consisting of ester groups, ether groups, and carbonate groups,

c = 1 to 8 and

X represents NH or NY, where Y is a C_1–C_8 alkyl group, at a temperature of between −20° to 150° C. in the presence of a stabilizing amount of a secondary or tertiary alcohol.

4,143,061
3-(α,α-DIMETHYLBENZYL)UREA COMPOUNDS, COMPOSITIONS, AND THEIR USE AS HERBICIDES

Hiroshi Kubo; Takashi Isono, both of Yokohama; Nansho Seki, Tokyo, and Noriyuki Sato, Yokohama, all of Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan

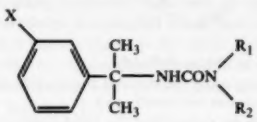
Filed Dec. 29, 1976, Ser. No. 755,281

Claims priority, application Australia, Dec. 30, 1975, 87946/75

Int. Cl.² A01N *9/20*; C07C *127/17*

U.S. Cl. 260—453 RW **2 Claims**

1. A compound of the general formula (I):



(I)

wherein X is halogen or trifluoromethyl, R_1 is methyl or methoxy and R_2 is C_4–C_5 alkyl, cyclohexyl or phenyl.

4,143,062
STABILIZED PREPARATIONS OF AROMATIC ISOCYANATO SULPHONIC ACIDS

Dieter Dieterich, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 19, 1977, Ser. No. 825,881

Claims priority, application Fed. Rep. of Germany, Sep. 7, 1976, 2640103

Int. Cl.² C07C *119/048*

U.S. Cl. 260—453 SP **3 Claims**

1. Mixture in the form of a moist powder, paste or suspension which is stable in storage, containing:

a. from 20 to 90%, by weight, of solid, finely dispersed aromatic isocyanato sulphonic acids which are solids at room temperature; and

b. from 80 to 10%, by weight, of a non-polar liquid having a boiling point above 90° C. which is inert towards isocyanate groups and sulphonic acid groups and does not dissolve the aromatic isocyanato sulphonic acids mentioned under (a).

4,143,063
PREPARATION OF CARBODIIMIDE-CONTAINING POLYISOCYANATES

Louis M. Alberino, and Curtis P. Smith, both of Cheshire, Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

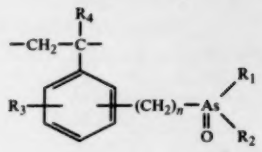
Continuation-in-part of Ser. No. 764,373, Jan. 31, 1977, abandoned. This application Apr. 10, 1978, Ser. No. 894,737

Int. Cl.² C07C *119/055*

U.S. Cl. 260—453 SP **8 Claims**

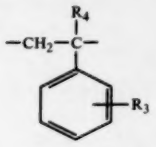
1. A process for preparing a carbodiimide-containing organic polyisocyanate said process comprising:

heating an organic polyisocyanate to a temperature in the range of about 70° C. to about 200° C. in the presence of a catalytic amount of a polymer characterized in that from 0.1 percent to 100 percent of the recurring units have the formula



(I)

wherein R_1 and R_2 are hydrocarbyl free from substituents reactive with isocyanate groups, R_3 is selected from the class consisting of hydrogen, chloro and methyl, R_4 is selected from the class consisting of hydrogen and methyl, and n is an integer from 0 to 1 and the remainder of the recurring units in said polymer have the formula



wherein R_4 and R_3 are as above defined;

continuing said heating until the desired proportion of carbodiimide-formation has occurred; and

stopping said reaction by separating the solid catalyst from the carbodiimide containing organic polyisocyanate.

4,143,064

MANUFACTURE OF β-HALOCETALS OR β-HALOKETALS

Hans-Peter Loeffler, Ludwigshafen, and Karl Kiehs, Lampertheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

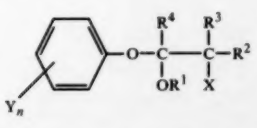
Filed Mar. 30, 1977, Ser. No. 782,638

Claims priority, application Fed. Rep. of Germany, May 8, 1976, 2620498

Int. Cl.[2] C07C *139/00, 41/06, 67/00*

U.S. Cl. 260—456 R **3 Claims**

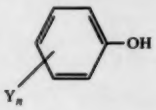
1. A process for the manufacture of β-haloacetals or β-haloketals of the formula



I,

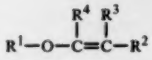
where R^1 denotes linear or branched alkyl of 1 to 6 carbon atoms, or phenyl which may be substituted by halogen or linear or branched alkyl of a maximum of 4 carbon atoms; R^2 and R^3 denote hydrogen, linear or branched alkyl of 1 to 4 carbon atoms, phenyl which may be substituted by halogen or linear or branched alkyl, or halogen, with the proviso that R^2 and R^3 cannot simultaneously denote halogen; R^4 denotes hydrogen, linear or branched alkyl of 1 to 4 carbon atoms, or phenyl which may be substituted by halogen or linear or branched alkyl; X denotes chlorine; Y denotes the radical $-O-SO_m-R^5$; R^5 denoting linear or branched alkyl or haloalkyl, each of 1 to 4 carbon atoms, or phenyl which may be substituted by linear or branched alkyl of 1 to 4 carbon atoms or by halogen, and m denoting one of the integers 1 and 2, Y further denotes the radical

R^6 denoting linear or branched alkyl, alkoxy or haloalkyl, each of 1 to 4 carbon atoms, or alkylamino or dialkylamino of 1 to 4 carbon atoms in one alkyl group, and n denotes one of the integers 0, 1, 2 and 3, which process comprises reacting phenols of the formula



II,

where Y and n have the above meanings, with vinyl ethers of the formula



III,

where R^1, R^2, R^3 and R^4 have the above meanings, and with a positive chlorine-liberating compound selected from the group consisting of tert.-butyl hypochlorite and N-chlorosuccinimide in the presence of an inert diluent or solvent at a temperature of from −50° to +10° C.

4,143,065

POLYCYCLIC SCENTS

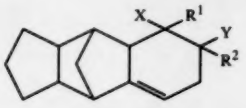
Werner Hoffmann, Neuhofen, and Karl Von Fraunberg, Bobenheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Rheinland, Pfalz, Fed. Rep. of Germany

Division of Ser. No. 708,994, Jul. 26, 1976, Pat. No. 4,076,748. This application Jul. 15, 1977, Ser. No. 815,931

Int. Cl.[2] C07C *121/48*

U.S. Cl. 260—464 **2 Claims**

1. A Diels-Alder adduct of the general formula I



(I)

where R^1 and R^2 are independently —H or $—CH_3$, or R^1 and R^2 together are a further bond between the carbon atoms on which they are present, and X and Y are each independently —CN or one of X and Y is —H or $—CH_3$ and the other has the above meaning.

4,143,066

SEPARATION AND RECOVERY OF CARBOXYLIC ACIDS FROM WATER

Victor Kalcevic, Knoxville, Tenn., assignor to The Dow Chemical Company, Midland, Mich.

Filed Dec. 16, 1976, Ser. No. 751,225

Int. Cl.[2] C07C *51/44;* **B01D** *3/14*

U.S. Cl. 562—513 **22 Claims**

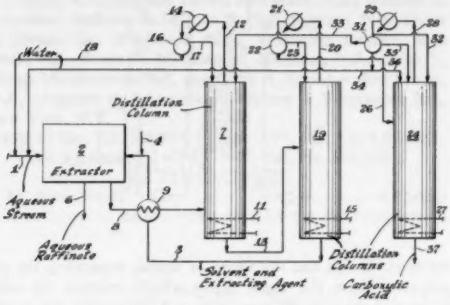
1. A method of separating and recovering a lower carboxylic acid from a mixture which includes an organic solvent, an extracting agent, water, and the lower carboxylic acid comprising the steps of:

(a) passing the mixture to a first distillation zone to separate the mixture into a first stream which is removed as overhead and which includes a substantial amount of the water and a second stream which is removed as bottoms comprising substantially all of the organic solvent, extracting agent, lower carboxylic acid, and remainder of the water;

(b) passing the second stream to a second distillation zone to form a third stream which is removed as bottoms comprising substantially all of the organic solvent and the extracting agent and substantially free of water and of the lower carboxylic acid and a fourth stream which is removed as

overhead comprising the lower carboxylic acid, water, and remainder of the organic solvent; and

(c) passing the fourth stream to a third distillation zone to form a fifth stream which is removed as overhead comprising water and organic solvent and a sixth stream which is removed as bottoms comprising the lower carboxylic acid substantially free of water and of organic solvent.



4,143,067

PROCESS FOR THE PRODUCTION OF CHLOROACETYL CHLORIDE

Erich Greth, Visp, Switzerland, assignor to Lonza, Ltd., Gampel, Switzerland

Filed Dec. 21, 1977, Ser. No. 862,850

Claims priority, application Switzerland, Dec. 22, 1976, 16171/76

Int. Cl.[2] **C07C** *51/58*

U.S. Cl. 260—544 Y **8 Claims**

1. A process for the production of chloroacetyl chloride which comprises reacting ketene with sulfuryl chloride in a solvent at a temperature of −40° to +40° C. to produce chloroacetyl chloride 0.4 to 1 mole of ketene being used per mole of sulfuryl chloride.

4,143,068

PROCESS FOR THE PREPARATION OF ACYL CYANIDE COMPOUNDS

Kurt Findeisen, Odenthal, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

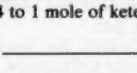
Filed Mar. 11, 1977, Ser. No. 777,288

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1976, 2614242

Int. Cl.[2] **C07C** *51/54, 120/00*

U.S. Cl. 260—545 R **24 Claims**

1. Process for the preparation of acyl cyanide



(I)

wherein

R is alkyl or substituted alkyl with 1 to 8 carbon atoms, wherein the substituents are selected from alkoxy or carbalkoxy of up to 4 carbon atoms in the alkoxy moiety, nitro, nitrile and halo; cyano-carbonyl substituted alkyl; cycloalkyl or substituted cycloalkyl with 3 to 12 carbon atoms wherein the substituent is selected from alkyl, alkoxy and carbalkoxy of up to 4 carbon atoms in each alkyl moiety, nitro, nitrile and halo; aryl or substituted aryl wherein the substitutents are selected from alkyl, alkoxy and carbalkoxy of up to 4 carbon atoms in the alkyl moiety, nitro and halo; or represents an optionally substituted 5-membered or 6-membered heterocyclic radical which can additionally also be fused with a benzene ring, wherein said substituents are selected from alkyl, alkoxy and carbalkoxy of up to 4 carbon atoms in each alkyl moiety, nitro, nitrile and halo;

which process comprises reacting an acid halide of the formula

(II)

wherein

R′ is alkyl or substituted alkyl with 1 to 8 carbon atoms, wherein the substituents are selected from alkoxy or carbalkoxy of up to 4 carbon atoms in the alkoxy moiety, nitro, nitrile and halo; or

substituted alkyl; cycloalkyl or substituted cycloalkyl with 3 to 12 carbon atoms wherein the substituent is selected from alkyl, alkoxy and carbalkoxy of up to 4 carbon atoms in each alkyl moiety, nitro, nitrile and halo; aryl or substituted aryl wherein the substituents are selected from alkyl, alkoxy and carbalkoxy of up to 4 carbon atoms in the alkyl moiety, nitro and halo; or represents an optionally substituted 5-membered or 6-membered heterocyclic radical which can additionally also be fused with a benzene ring, and

X is halogen,

with an alkali metal cyanide or anhydrous hydrocyanic acid in the presence of a heavy metal cyanide, at a temperature of between 100° C. and 300° C.

4,143,069

N-(1,1 SUBSTITUTED PROPYNYL)-α-(3,5-SUBSTITUTED PHENOXY) ALKYL AMIDES

Duane R. Arneklev, Sunnyvale; Don R. Baker, Orinda, and Francis H. Walker, Mill Valey, all of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

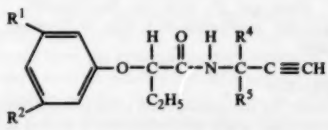
Continuation of Ser. No. 617,454, Sep. 29, 1975, Pat. No. 4,051,184, which is a continuation of Ser. No. 464,715, Apr. 26, 1974, abandoned, which is a continuation of Ser. No. 353,871, Apr. 23, 1973, abandoned, which is a continuation of Ser. No. 157,058, Jun. 25, 1971, abandoned. This application Mar. 28, 1977, Ser. No. 782,218

The portion of the term of this patent subsequent to Sep. 27, 1994, has been disclaimed.

Int. Cl.[2] **C07C** *103/178*

U.S. Cl. 260—559 B **6 Claims**

1. Compounds of the formula



in which R^1 and R^2 are both chlorine or both methyl; R^4 is hydrogen or methyl and R^5 is hydrogen, methyl or ethyl provided that R^4 and R^5 are both not methyl.

4,143,070
BIS-SUBSTITUTED SUCCINAMIDES AND THEIR UTILITY AS HERBICIDES

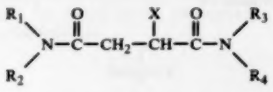
Francis H. Walker, Mill Valley, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 546,234, Feb. 3, 1975, Pat. No. 4,056,524, which is a continuation-in-part of Ser. No. 459,438, Apr. 9, 1974, abandoned, which is a continuation-in-part of Ser. No. 410,641, Nov. 12, 1973, abandoned. This application Aug. 4, 1977, Ser. No. 821,688

Int. Cl.[2] C07C *103/34*

U.S. Cl. 260—561 HL 29 Claims

1. A compound in which the formula is



in which X is chlorine or bromine; R_1 and R_3 are each hydrogen, alkyl having from 1 to 8 carbon atoms, inclusive, haloalkyl having from 1 to 6 carbon atoms, inclusive, in which halo is fluorine, bromine and chlorine, alkenyl having from 2 to 6 carbon atoms, inclusive, or alkynyl having from 2 to 8 carbon atoms, inclusive; R_2 and R_4 are each hydrogen, haloalkenyl having from 2 to 6 carbon atoms, inclusive, in which halo is chlorine or bromine, alkoxyalkyl having from 2 to 8 carbon atoms, inclusive, cycloalkyl having from 3 to 7 carbon atoms, inclusive, cyclopropylmethyl, or benzyl; provided further that only one of R_1 or R_2 is hydrogen and only one of R_3 or R_4 is hydrogen.

4,143,071
HIGH TERTIARY AMINE CONTENT COMPOSITIONS USEFUL AS POLYURETHANE CATALYSTS

Edward E. McEntire, and George P. Speranza, both of Austin, Tex., assignors to Texaco Development Corp., New York, N.Y.

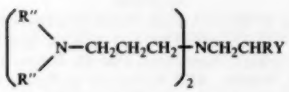
Division of Ser. No. 766,464, Feb. 7, 1977, abandoned, which is a division of Ser. No. 733,548, Oct. 18, 1976, Pat. No. 4,049,591.

This application Sep. 6, 1977, Ser. No. 830,534

Int. Cl.[2] C07C *103/50, 103/127, 103/187*

U.S. Cl. 260—561 A 1 Claim

1. A compound of the formula:



where R'' is lower alkyl, R is hydrogen or lower alkyl and Y is $CONR'_2$ where R' is independently hydrogen, lower alkyl or aryl.

4,143,072
PROCESS FOR THE PURIFICATION OF POLYETHERS USING A TUBULAR COIL EVAPORATOR

Hartmut Hetzel, Cologne; Pramod Gupta, Bedburg, and Hans-Joachim Sandhagen, Dormagen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

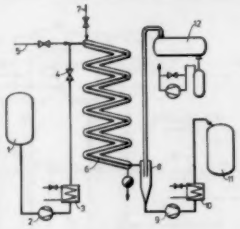
Filed Apr. 27, 1978, Ser. No. 900,539

Claims priority, application Fed. Rep. of Germany, Dec. 10, 1977, 2755089

Int. Cl.[2] C08G *65/30*

U.S. Cl. 260—573 7 Claims

1. A process for the purification of crude polyethers, comprising introducing crude polyether into a heated tubular coil evaporator together with from 1 to 20%, by weight, of steam, a pressure of from 5 to 200 mbars being applied to the end of the tubular coil evaporator and, at the same time, the heating of the tubular coil evaporator being regulated in such a way that the polyether temperature in the evaporator is from 100° to 220° C., the rate of flow of the vapor mixture, based on the cross-sectional area of the tube through which it flows, being



between 40 m/s and the speed of sound; separating the pure polyether from the vapor phase which contains the added steam and the volatile impurities; and recovering the purified polyether.

4,143,073
PROCESS FOR PREPARING SUBSTITUTED N-ALKOXY-N-SUBSTITUTED-2,6-DINITROANILINES

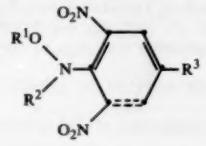
James C. Williams, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Jun. 27, 1977, Ser. No. 810,228

Int. Cl.[2] C07C *85/04*

U.S. Cl. 260—574 5 Claims

1. A method of preparing substituted N-alkoxy-N-substituted-2,6-dinitroanilines of the formula



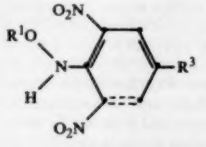
(I)

wherein

R^1 is methyl or ethyl;

R^2 is C_1–C_3 alkyl or C_3–C_4 alkenyl; and

R^3 is methyl, ethyl, or trifluoromethyl, which comprises allowing a compound of the formula:



(II)

to react with an alkylating agent selected from the group consisting of a C_1–C_3 alkyl halide and a C_3–C_4 alkenyl halide, in dimethylformamide in the presence of sodium hydride.

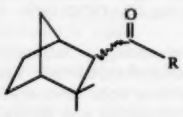
4,143,074

ALKANOYL DIMETHYLNORBORNANES

Kenneth K. Light, Long Branch; James M. Sanders, Eatontown; Manfred H. Vock, Locust, all of N.J.; Edward J. Shuster, Brooklyn, N.Y.; Joaquin Vinals, Red Bank, N.J.; William L. Schreiber, Jackson, N.J.; John B. Hall, Rumson, N.J.; Denis E. Hruza, Sr., Bricktown, N.J.; Venkatesh Kamath, Red Bank, N.J.; Braja D. Mookherjee, Holmdel, N.J.; Ching Y. Tseng, Middletown, N.J., and Mark A. Sprecker, Sea Bright, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 765,847, Feb. 4, 1977, Pat. No. 4,076,853.
This application Dec. 13, 1977, Ser. No. 860,138
Int. Cl.[2] C07C *49/43*
U.S. Cl. 260—586 G 4 Claims

1. A carbocyclic ketone compound having the structure:



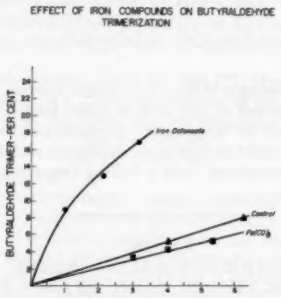
wherein R is alkyl selected from the group consisting of ethyl, n-propyl and n-butyl.

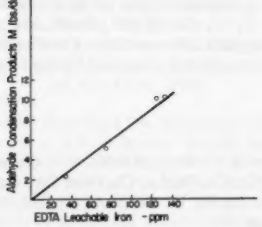
4,143,075

CONTROL OF CONDENSATION PRODUCTS IN HYDROFORMYLATION PROCESS

David R. Bryant, South Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.

Filed Aug. 12, 1976, Ser. No. 713,680
Int. Cl.[2] C07C *45/02*
U.S. Cl. 260—604 HF 10 Claims


EFFECT OF IRON COMPOUNDS ON BUTYRALDEHYDE TRIMERIZATION
BUTYRALDEHYDE TRIMER - PER CENT
REACTION TIME - HOURS
Iron Octoate
Control
Fe(CO)5
300 ppm Fe as Iron Octoate and 500 ppm Rhodium
300 ppm Fe as Iron Pentacarbonyl and 500 ppm Rhodium
Control - No iron or rhodium



1. In a process for producing aldehyde products by the rhodium catalyzed hydroformylation of alpha-olefins containing 2 to about 20 carbon atoms comprising: providing a liquid body of a homogeneous mixture containing olefin, aldehyde products and higher boiling aldehyde condensation products, a soluble rhodium catalyst complexed with carbon monoxide and triarylphosphine, at least 10 moles of free triarylphosphine being present for each mole of rhodium metal, the liquid body also containing iron salt contaminants which promote the formation of said condensation products; suppling to the liquid body a gaseous stream comprising hydrogen and carbon monoxide maintaining the temperature of the liquid body at 50° C. to about 130° C., the total pressure at less than about 400 psia, the improvement which comprises removing said iron salts from the liquid body by complexation with an aqueous solution of a sequestering agent, and thereafter removing the resulting iron complex in a separate aqueous phase.

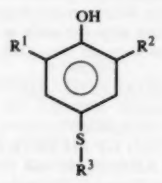
4,143,076

MERCAPTO PHENOLIC AND ALKYLTHIO PHENOLIC ANTIOXIDANTS

Kirkwood S. Cottman, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

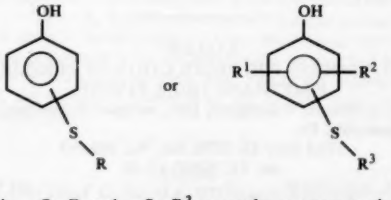
Division of Ser. No. 436,751, Jan. 25, 1974, Pat. No. 4,128,530.
This application Feb. 22, 1978, Ser. No. 879,842
Int. Cl.[2] C07C *148/00*
U.S. Cl. 260—609 F 8 Claims

1. A phenolic compound having the following structural formula:



wherein R^1 is selected from the group consisting of hydrogen and α-phenyl ethyl, R^2 is α-phenyl ethyl and R^3 is selected from the group consisting of α-phenyl ethyl and β-phenyl ethyl.

3. A process of preparing a (hydrocarbyl-thio) phenolic antioxidant having one of the following formulae:



wherein —S—R and —S—R^3 are ortho or para to the hydroxyl group; wherein R and R^3 are selected from the group consisting of H, alkenyl radicals having 2 to 20 carbon atoms, alkyl radicals having 2 to 20 carbon atoms, with the proviso that when R^3 is an alkyl radical it contains 4 to 20 carbon atoms, cycloalkyl radicals having 5 to 12 carbon atoms, aralkyl radicals having 7 to 20 carbon atoms and substituted and unsubstituted aryl radicals having 6 to 20 carbon atoms, R^1 and R^2 are selected from the group of radicals indicated for R and R^3 and methyl, with the proviso that R^1 is never hydrogen and with the further proviso that when R^3 is an alkyl radical, neither R^1 nor R^2 is hydrogen; comprising reacting a phenolic compound selected from the group consisting of 2-mercaptophenol and 4-mercaptophenol with a second reactant selected from the group consisting of olefins, alcohols, and organic halides.

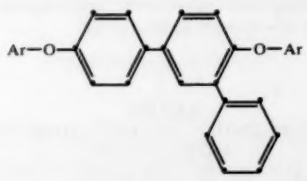
4,143,077

DIARYLOXY-META-TERPHENYL DERIVATIVES, THEIR MANUFACTURE AND USES

Bernard Masson, Poisat; Guy Rabilloud, and Bernard Sillion, both of Grenoble, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Sep. 8, 1977, Ser. No. 831,447
Claims priority, application France, Sep. 8, 1976, 76 27213
Int. Cl.[2] C07C *43/20;* C10M *1/20, 3/14;* C09K *50/00*
U.S. Cl. 568—636 7 Claims

1. A process for the preparation of a compound of the general formula:



in which each Ar radical is an aromatic monovalent radical consisting of a phenyl radical or a metaphenoxy phenyl radical, comprising the successive steps of: (a) brominating metaterphenyl, mainly to 4'-bromo m-terphenyl; (b) iodinating the product issued from step (a) to a mixture containing a major proportion of dihalogenated derivatives, mainly 4-iodo 4'-bromo m-terphenyl, and a minor proportion of monohalogentated derivatives, mainly 4-iodo m-terphenyl; and (c) reacting the product issued from step (b) with at least one alkaline phenate of the general formula Ar—OM, wherein M is an alkaline metal.

4,143,078

FLUORINATION OF METHYL KETONES

Marylu B. Gibbs, and Gordon Liu, both of Baton Rouge, La., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 22, 1978, Ser. No. 908,036
Int. Cl.[2] C07C *17/22*
U.S. Cl. 260—653.6 4 Claims

1. A process for making a 2,2-difluoroalkane which comprises reacting by contacting a methyl ketone of 3–6 carbon atoms in the vapor phase with vaporized aqueous HF of about 20–75 percent HF concentration at a temperature of about 190° C. —400° C.

4,143,079

NOVEL PROCESS FOR PRODUCTION OF PERFLUORO P-METHANE FROM PINENE

Robert E. Moore, Wilmington, Del., assignor to Suntech, Inc., Philadelphia, Pa.

Filed May 15, 1978, Ser. No. 905,693
Int. Cl.[2] C07C *17/00*
U.S. Cl. 260—648 F 3 Claims

1. A process for the preparation of perfluoro-1-methyl-4-isopropylcyclohexane which comprises perfluorinating pinane by contacting it with CoF_3 at a temperature greater than 175° C.

4,143,080

METHOD AND REAGENT FOR THE ASSAY OF HYDROPEROXIDE

Hans-Dieter Harders, and Roland Helger, both of Darmstadt, Fed. Rep. of Germany, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Nov. 11, 1977, Ser. No. 850,523
Claims priority, application Fed. Rep. of Germany, Nov. 25, 1976, 2653537
Int. Cl.[2] G01N *33/16*
U.S. Cl. 23—230 B 9 Claims

1. In a process for the photometric determination of hydroperoxides per se in a protein-containing body fluid, or indirectly of substances therein which react to liberate hydroperoxides, using an assay reagent comprising a water-soluble iodide, a redox catalyst and stabilizer, the improvement wherein the concentration of the redox catalyst in the reagent is 5–500 μM, and the concentration of stabilizer is 5–100 mg/l whereby the body fluid does not require deproteinization before the photometric determination.

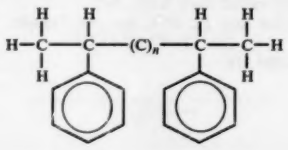
4,143,081

PREVENTION OF COLOR DETERIORATION OF DIPHENYLALKANES

Alfred B. Carel, and Jerry W. Wimberley, both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed Apr. 26, 1978, Ser. No. 899,917
Int. Cl.[2] C07C *7/18*
U.S. Cl. 260—666.5 10 Claims

1. A method of preventing, or substantially reducing, the color deterioration of diphenylalkanes, said diphenylalkanes being in contact with a color-deteriorating material, said method comprising contacting said diphenylalkanes with an effective amount, in the range of about 0.0005 to about 2 weight percent, based on the diphenylalkanes, of ammonia or a primary, secondary or tertiary amine, said amine having the following properties (a) soluble in the diphenylalkanes and (b) having a boiling range similar to said diphenylalkanes, said method being characterized further in that the term diphenylalkanes refers to (a) a material represented by the formula



wherein n is an integer of from 2 to 14 and wherein the phenyl groups are attached to any carbon other than the terminal carbon atom and (b) hydrocarbon composition containing at least about 50 weight percent diphenylalkanes and wherein the remaining hydrocarbons have a boiling range similar to the diphenylalkanes.

4,143,082

METHOD FOR MAKING INDENE

Joseph P. Bartek, University Heights, and Robert K. Grasselli, Chagrin Falls, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Jul. 18, 1977, Ser. No. 816,638
Int. Cl.[2] C07C *5/38, 15/22*
U.S. Cl. 260—668 F 12 Claims

1. A dehydrogenation process for producing unsubstituted or substituted indene from an unsubstituted or substituted bicyclic indene precursor more saturated than indene, said substituted indene precursor being substituted with at least one of C_1–C_4 alkyl, C_1–C_4 alkenyl and phenyl, said process comprising contacting said indene precursor and an oxygen donor with a phosphate catalyst represented by the formula:

$$M_aP_xO_y$$

wherein

M is one or more elements selected from the group consisting of Mg, Sr, Ca, Ba, La, Ce, other rare earths, Cr, Mn, Co, Ni, Cu, Zn, Pb, Bi, Te, B, Al, Rh, Sb, As, Ge, U, Th and Ru; and

wherein

$0.1 \times \leqq a \leqq 10x$, wherein a represents the sum of subscript a of all of the metal ions and y is a number such that the

valence requirements of the metal ions for oxygen is satisfied.

4,143,083

DEHYDROGENATION PROCESS

Gregor H. Riesser, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 787,647, Apr. 14, 1977, abandoned. This application Apr. 24, 1978, Ser. No. 899,040
Int. Cl.[2] C07C *5/10*
U.S. Cl. 260—669 R 21 Claims

1. In a process for effecting a continuous dehydrogenation of hydrocarbons to more unsaturated hydrocarbons at a temperature between about 500° C. and about 700° C., the improvement which comprises effecting the dehydrogenation with a catalyst comprising a mixture having:

(a) from about 50 to about 95 percent by weight of an iron oxide, measured as ferric oxide;

(b) from about 5 to about 30 percent by weight of a potassium compound selected from the group consisting essentially of potassium oxide, potassium carbonate, and mixtures thereof, measured as potassium oxide;

(c) from about 0.01 to about 9 percent by weight of a vanadium oxide, measured as vanadium pentoxide,

(d) from about 0.01 to about 10 percent by weight of an additive oxide selected from the group consisting of an oxide of cadmium, magnesium, manganese, nickel, a member of a rare earth series, uranium, and mixtures thereof measured as the individual oxide having the most stable form in air at one atmosphere and 25° C., and

(e) from 0 to about 30 percent by weight of a chromium oxide measured as chromic oxide.

4,143,084

DI-ALKYLBENZENE ISOMER MIXTURES

Warren N. Kaeding, Westfield, and Lewis B. Young, Skillman, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 801,177, May 27, 1977, abandoned, which is a continuation-in-part of Ser. No. 706,981, Jul. 19, 1976, Pat. No. 4,086,287. This application Jul. 17, 1978, Ser. No. 925,585
Int. Cl.[2] C07C *3/52*
U.S. Cl. 260—671 R 9 Claims

1. A dialkylbenzene isomer mixture consisting essentially of ethyltoluene or diethylbenzene obtained directly by ethylation respectively of toluene or ethylbenzene and which does not require separation of the resulting isomers by prior distillation is provided, which mixture, as obtained, is substantially devoid of the ortho isomer and consists essentialy of about 90 to about 99 weight percent of the para isomer and about 1 to about 10 weight percent of the meta isomer.

4,143,085

METHOD FOR ISOLATING LOW MOLECULAR WEIGHT POLYMER

Mitsuaki Funada, Suita; Kazuo Hayatsu, Ibaraki, and Takanobu Noguchi, Takatsuki, all of Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

Filed Jul. 13, 1977, Ser. No. 815,077
Claims priority, application Japan, Jul. 22, 1976, 51-87807
Int. Cl.[2] C07C *7/10*
U.S. Cl. 260—677 A 13 Claims

1. In a method for isolating a low molecular weight polymer from a solution of a low molecular weight diene polymer having a viscosity of 5 to 100,000 cps at 30° C. and an inactivated catalyst in a hydrophobic organic solvent, by mixing the solution containing the low molecular weight polymer with water or a mixture of water and a water-soluble organic solvent, allowing the resulting mixture to stand and to separate into an aqueous layer and an organic layer and then recovering the low molecular weight polymer from the organic layer, the improvement which comprises mixing the solution containing the low molecular weight polymer with water or the mixture of water and a water-soluble organic solvent in the presence of an amphoteric, cationic or nonionic surfactant or a nonionic or cationic high molecular weight flocculating agent at a temperature of from 0° to 80° C.

4,143,086

FLUID CATALYTIC CRACKING OF AMORPHOUS POLYPROPYLENE

Robert A. Carle, and Paul D. Hann, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 2, 1977, Ser. No. 792,831
Int. Cl.[2] C07C *3/26*
U.S. Cl. 260—683 PD 7 Claims

1. A process comprising:

charging a mixture of amorphous polypropylene containing a titanium catalyst residue and a hydrocarbon feedstock to a catalytic cracking unit, said amorphous polypropylene being present in an amount up to about 2.5 volume percent, based upon the feed to said unit; and

contacting the mixture of amorphous polypropylene and feedstock with a catalyst in the catalytic cracking unit to produce an effluent comprising propylene,

wherein the cracking catalyst in the catalytic cracking unit is in contact with at least one metal capable of poisoning the catalyst and wherein the titanium catalyst residue in the amorphous polypropylene deactivates at least a portion of the at least one metal that is capable of poisoning the catalyst.

4,143,087

DIMERIZATION PROCESS

John R. Bamforth, and Raymond Higgins, both of Middlesbrough, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Jun. 13, 1978, Ser. No. 915,122
Claims priority, application United Kingdom, Jun. 17, 1977, 25441/77
Int. Cl.[2] C07C *3/20*
U.S. Cl. 260—683.15 R 11 Claims

1. A process for the oxidative dimerisation of a compound of general formula $R_1R_2C=CR_3-CH.R4R_5$ where R_1, R_2, R_3, R_4 and R_5 are selected individually from hydrogen, alkyl, aryl, cyano, cyclohexyl, halide groups and substituted derivatives of these groups which comprises heating the compound $R_1R_2C=CR_3-CH-R_4R_5$ in the presence of a catalyst comprising bismuth oxide in partially reduced form, the average degree of reduction of bismuth oxide throughout the catalyst bed being at least 1% and not more than 70%, and in the presence of oxygen, the oxygen conversion in the process lying in the range 90 to 99%.

4,143,088

RAPIDLY CURABLE, STORAGE-STABLE ORGANOSILICON COMPOSITIONS

Georges Favre, Serezin; André Gibard, Venissieux, and Michel Letoffé, Sainte Foy les Lyon, all of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Mar. 24, 1977, Ser. No. 780,913
Claims priority, application France, Mar. 24, 1976, 76 08528
Int. Cl.[2] C08L *19/00, 83/06*
U.S. Cl. 260—825 13 Claims

1. An organosilicon composition which is storage-stable in the absence of water and curable into elastomers under ambient conditions, and which comprises:

(a) 100 parts by weight of at least one α,ω-di(hydroxy) diorganopolysiloxane polymer [A] having a viscosity of at least 600 cps at 25° C and essentially consisting of diorganosiloxy units of the formula R_2SiO wherein each substituent R is the same or different and represents an alkyl or halogenoalkyl group containing 1 to 8 carbon atoms, a

cycloalkyl or halogenocycloalkyl group containing 3 to 8 carbon atoms, an alkenyl group containing 2 to 4 carbon atoms, an aryl or halogenoaryl group containing 6 to 8 carbon atoms or a cyanoalkyl group containing 3 to 4 carbon atoms, and wherein at least 50% of all the substituents R represent methyl;

(b) 15 to 50 parts by weight of at least one organosilicon resin [B] essentially consisting of units of the formulae SiO_2 and $R'_3SiO_{0.5}$, wherein each substituent R' is the same or different and represents an alkyl or halogenoalkyl group containing 1 to 3 carbon atoms, a vinyl group or a phenyl group, and wherein the molar ratio between the $R'_3SiO_{0.5}$ units and the SiO_2 units is from 0.4:1 to 1.2:1;

(c) 2 to 25 parts by weight of at least one alkoxylated organosilicon compound [C] which is selected from the group consisting of:

monomers [F] of formula (C_1), $R_xSi[(OCH_2CH_2)_aOR'']_{4-x}$, wherein R is as defined above for the α,ω-di(hydroxy) diorganosiloxane polymers [A], R'' represents an alkyl group containing 1 to 4 carbon atoms, "a" represents zero or 1, and "x" represents zero, 1 or 2;

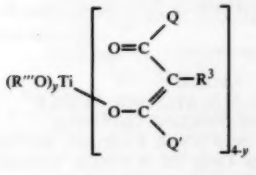
polymers [G] obtained by partial hydrolysis of monomers of formula $Si(OR'')_4$, wherein R'' is as defined above for the compounds [F], with the proviso that, when employing those difunctional monomers of the formula [F] wherein x is 2, the same are necessarily admixed with either other monomers of the formula [F] wherein x is either 0 or 1, and/or with the aforesaid polymers resulting from partial hydrolysis of the $Si(OR'')_4$ monomers, and with the further proviso that such admixtures comprise at most 40% of difunctional monomers; and

(d) 0.5 to 18 parts by weight of at least one organic titanium derivative [D] which is selected from the group consisting of:

monomers [H] of the formula $Ti[OCH_2CH_2)_bOR''']_4$, wherein b represents zero, 1 or 2, and R''' represents an alkyl group which contains 2 to 12 carbon atoms if b equals zero and which contains 1 to 4 carbon atoms if b equals 1 or 2,

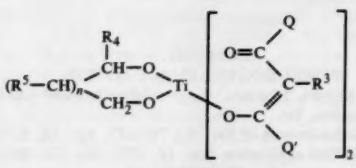
polymers [I] obtained by partial hydrolysis of monomers of the formula $Ti(OR''')_4$, wherein R''' represents an alkyl group containing 2 to 12 carbon atoms, and

titanium chelates [J] which are selected from the group of compounds of formula (D_1)



(D_1)

wherein R''' represents an alkyl group containing 2 to 12 carbon atoms and y is 2 or 3, Q represents hydrogen, an alkyl group containing 1 to 4 carbon atoms, a phenyl group, an alkoxy group containing 1 to 5 carbon atoms or a dialkylamino group, the alkyl groups of which each contain 1 to 3 carbon atoms, R^3 represents hydrogen, methyl, chloromethyl or acetyl, Q' represents an alkyl group containing 1 to 5 carbon atoms or chloromethyl, or wherein Q is hydrogen or an alkoxy group containing 1 to 5 carbon atoms, R^3 and Q' together with the carbon atoms from which they depend can be linked to form a phenyl nucleus, and compounds of formula (D_2)



(D_2)

wherein R^4 and R^5 each are the same or different and each represents hydrogen or methyl, n represents zero, 1 or 2, and Q, Q' and R^3 are as defined above for formula (D_1).

4,143,089

SILYLATED POLYMERS

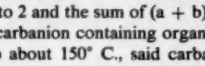
Eugene R. Martin, Onsted, Mich., assignor to SWS Silicones Corporation, Adrian, Mich.

Continuation-in-part of Ser. No. 533,051, Dec. 16, 1974, abandoned. This application Nov. 22, 1976, Ser. No. 743,722

Int. Cl.[2] C08F *297/02*

U.S. Cl. 260—827 **16 Claims**

1. A carbanion containing silylated organic polymer obtained from the reaction of a silane of the formula



where R is a monovalent hydrocarbon radical, X is selected from the class consisting of halogen, acyloxy radicals, hydrocarbonoxy radicals, sulfato radicals, phosphato radicals and perchlorato radicals, a is a number of from 1 to 3, b is a number of from 0 to 2 and the sum of (a + b) is a number of from 1 to 3, with a carbanion containing organic polymer at a temperature up to about 150° C., said carbanion containing organic polymer is obtained from the polymerization of an unsaturated organic monomer having carbon-to-carbon double bonds in the presence of a carbanion forming catalyst.

4,143,090

HARDENABLE COMPOSITIONS COMPRISING AN UNSATURATED EPOXY ESTER AND AN ETHYLENICALLY UNSATURATED MONOMER

Silvio Vargiu, Casatenovo (Como); Beppino Passalenti, Lissone (Milan), and Silvestro Pezzoli, Biassono (Milan), all of Italy, assignors to Societa' Italiana Resine S.I.R. S.p.A., Milan, Italy

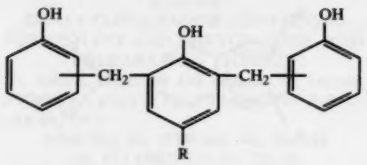
Filed May 2, 1977, Ser. No. 792,821

Claims priority, application Italy, Apr. 30, 1976, 22906 A/76

Int. Cl.[2] C08L *63/00*

U.S. Cl. 260—837 R **11 Claims**

1. A hardenable composition comprising an unsaturated epoxy ester resin and an ethylenically unsaturated monomer copolymerizable with the latter, said monomer being present in the composition in an amount of from 0.4 to 2 parts by weight for each part by weight of said resin, and said resin being the reaction product of an unsaturated monocarboxylic acid or a monoester of an unsaturated bicarboxylic acid with the epoxidation product of epichlorohydrin and a novolak phenolic resin of the structural formula:



wherein R is an alkyl radical containing from 1 to 10 carbon atoms, the methylene bridges being bonded to the central phenol ring in the ortho-positions in relation to the hydroxyl group, and to the other phenol rings in the ortho- or para-positions in relation to the hydroxyl groups.

4,143,091

COMPOSITION USEFUL IN MAKING EXTENSIBLE FILMS

Wen-Hsuan Chang; J. Alden Erikson, both of Gibsonia, and Samuel Porter, Jr., Tarentum, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 602,855, Aug. 7, 1975, abandoned, which is a division of Ser. No. 392,585, Aug. 29, 1973, Pat. No. 3,919,351. This application Jun. 14, 1977, Ser. No. 806,386

Int. Cl.[2] C08L *75/04*

U.S. Cl. 260—859 R **15 Claims**

1. A curable solvent soluble coating composition comprising the reaction product of:

A. an organic polyisocyanate;

B. a polymeric polyol having a glass transition temperature of less than 50° C.; and

C. an interpolymer of:

1. a hydroxyalkyl ester of an ethylenically unsaturated carboxylic acid; and

2. at least one other copolymerizable ethylenically unsaturated monomer wherein at least a portion of said copolymerizable monomer is an alkoxymethyl-containing acrylamide;

said interpolymer being different from said polymeric polyol; when said polymeric polyol is an acrylic polyol, said polymeric acrylic polyol having a glass transition temperature at least 10° C. lower than that of the interpolymer;

the equivalent ratio of isocyanate groups to hydroxyl groups in (A), (B) and (C) being between 1:1.1 and about 1:9, the sequence of reaction steps used in preparing said coating composition being selected so that gelation is avoided and said coating composition being curable through said alkoxymethylcontaining acrylamide moieties.

4,143,092

POLYURETHANE-DERIVED PLASTICIZER FOR POLYACRYLONITRILE PRINTING ROLLS

Yale Karmell, Chicago, Ill., assignor to Samuel Bingham Company, Franklin Park, Ill.

Division of Ser. No. 652,419, Jan. 26, 1976, abandoned. This application Sep. 21, 1977, Ser. No. 835,443

Int. Cl.[2] C08L *75/04;* **B29H** *19/00;* **B05B** *1/08*

U.S. Cl. 260—859 R **8 Claims**

1. A method for modifying the hardness of an acrylonitrile rubber which comprises mixing with the rubber prepolymer and curing agents a proportion of plasticizer sufficient to modify the hardness of the cured rubber to the desired degree and curing the rubber-plasticizer mix, said plasticizer comprising a mixture, by weight of from 25% to 75% of an ester plasticizer and from 75% to 25% of the viscous liquid reaction product of a polyurethane elastomer with an amine at an elevated temperature, said ester plasticizer having the general compatibility characteristics, with respect to said rubber and said polyurethane reaction product, of dioctyl phthalate, dibutyl phthalate, dioctyl adipate, and dioctyl sebacate.

5. A printing roller composition comprising an acrylonitrile elastomer, a vulcanizing agent in sufficient proportion to vulcanize said elastomer, and a mixed plasticizer, comprised, by weight, of from 25 to 75% of an ester plasticizer and from 75 to 25% of the viscous liquid reaction product of a polyurethane elastomer with an amine at an elevated temperature, in sufficient proportion relative to said elastomer to produce a composition hardness of from 20 to 50 on the Shore "A" scale when vulcanized.

4,143,093

POLYESTER THREADS AND FIBERS HAVING INCREASED DYE AFFINITY

Jörn Rüter, Marl, Fed. Rep. of Germany, assignor to Chemische Werke Huls AG, Marl, Fed. Rep. of Germany

Filed Mar. 23, 1978, Ser. No. 889,419

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1977, 2715673

Int. Cl.[2] C08L *67/02*

U.S. Cl. 260—860 **3 Claims**

1. Method for the production of polyester threads having increased dye affinity comprising:

(a) mixing about 85–97% by weight of a polyester selected from the group consisting of poly(ethylene terephthalate) and poly(1,4-cyclohexylenedimethylene terephthalate) with about 3–15% by weight of poly(ethylene dodecanedioate);

(b) spinning the mixture into threads; and

(c) dyeing the spun threads.

4,143,094

PROCESS FOR PRODUCTION OF SATURATED, HIGH-MOLECULAR WEIGHT POLYESTERS

Klaus Burzin; Jörn Rüter, and Roland Feinauer, all of Marl, Fed. Rep. of Germany, assignors to Chemische Werke Huls, AG, Fed. Rep. of Germany

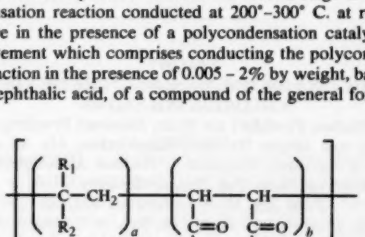
Filed Mar. 25, 1977, Ser. No. 781,274

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1976, 2614980

Int. Cl.[2] C08L *35/02, 35/06, 67/06*

U.S. Cl. 260—873 **9 Claims**

1. In a two-stage process for the production of saturated, high-molecular weight polyesters whose acid component consists at least 70 molar percent of terephthalic acid and whose diol component consists at least 70 molar percent of 1,4-butanediol wherein the first stage is an interesterification reaction conducted at 150°–250° C. in the presence of an interesterification catalyst and wherein the second stage is a polycondensation reaction conducted at 200°–300° C. at reduced pressure in the presence of a polycondensation catalyst, the improvement which comprises conducting the polycondensation reaction in the presence of 0.005 – 2% by weight, based on the terephthalic acid, of a compound of the general formula



having a molecular weight of 1,000 – 1,000,000 wherein

a and b are each positive integers from 1 to 100;

n is a positive integer from 10 to 10,000;

R_1 and R_2 are each hydrogen, alkyl of 1–12 carbon atoms or phenyl; and

R_3 and R_4 are each hydrogen, alkyl or hydroxy-alkyl of 1–4 carbon atoms, said compound either being added before the interesterification reaction, or during the interesterification reaction up to the beginning of the polycondensation reaction or, when the compound is a free acid, at any

time up to the end of the polycondensation reaction, or said compound being formed during the interesterification or polycondensation reaction.

4,143,095

POLYPHENYLENE ETHER RESIN COMPOSITIONS CONTAINING A HYDROGENATED ELASTOMERIC BLOCK COPOLYMER

Gim F. Lee, Jr., Albany, N.Y., assignor to General Electric Company, Pittsfield, Mass.

Filed Sep. 30, 1977, Ser. No. 838,373

Int. Cl.[2] C08L *9/00, 9/06*

U.S. Cl. 260—874 **32 Claims**

1. A thermoplastic composition which, after molding, has good impact resistance, said composition comprising:

(a) a polyphenylene ether resin;

(b) an alkenyl aromatic resin that is modified with a rubbery interpolymer of a mixture of mono-olefins and a polyene, by polymerizing an alkenyl aromatic monomer in the presence of the rubbery interpolymer; and

(c) a selectively hydrogenated elastomeric block copolymer of the A-B-A type, wherein terminal blocks A are a polymerized vinyl aromatic hydrocarbon and center block B is a polymerized conjugated diene.

4,143,096

ETHYLENE CARBON MONOXIDE GRAFT COPOLYMERS

Donald E. Hudgin, Princeton Junction, N.J., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 23, 1977, Ser. No. 864,024

Int. Cl.[2] C08G *67/02*

U.S. Cl. 260—878 R **17 Claims**

1. A polymeric composition having a number average molecular weight of about 5,000 to 5,500,000 comprised of an ethylene-carbon monoxide copolymer graft-copolymerized onto a backbone polymer comprised of at least one α-monoolefin containing 2 to 4 carbon atoms, the weight ratio of ethylene-carbon monoxide copolymer to poly α-monoolefin in said graft copolymer being in the range of 100:1 to 1:100 and the molar ratio of ethylene to carbon monoxide in said ethylene-carbon monoxide copolymer being in the range of 1:1 to about 20:1.

4,143,097

PROCESS FOR THE MANUFACTURE OF VINYL CHLORIDE POLYMERS

Edgar Fischer, Frankfurt am Main; Johannes Brandrup, Wiesbaden, and Jürgen Weinlich, Burgkirchen, Alz, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

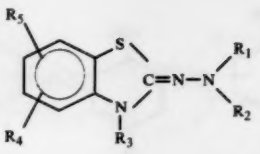
Filed Jan. 25, 1978, Ser. No. 872,155

Claims priority, application Fed. Rep. of Germany, Jan. 27, 1977, 2703280

Int. Cl.[2] C08F *14/06;* **C08L** *27/06*

U.S. Cl. 260—884 **7 Claims**

1. A process for the manufacture of vinyl chloride homopolymers, copolymers or graft polymers containing at least 50% by weight of polymerized vinyl chloride units by polymerization of the monomer or the monomer mixture in aqueous dispersion in the presence of radical-forming catalysts, optionally suspension stabilizers, emulsifiers and further polymerization auxiliaries, which comprises carrying out the polymerization in a reactor the inner walls of which and other parts where polymer deposits may form are coated entirely or partially with a coating containing a compound of the formula



in which

R_1 is hydrogen, an organic hydrocarbon radical having from 1 to 12 carbon atoms, or acyl having from 2 to 8 carbon atoms,

R_2 is R_1 or

R_2 and R_1 together are alkylidene of 1 to 6 carbon atoms or aralkylidene of 7 to 10 carbon atoms,

R_3 is hydrogen or an organic hydrocarbon radical having from 1 to 12 carbon atoms; at least one of the radicals R_1, R_2 or R_3 being hydrogen,

R_4 is R_3; furthermore an organic hydrocarbonoxy radical having from 1 to 12 carbon atoms, hydroxyl, halogen, amino, (di)alkylamino having from 1 to 12 carbon atoms, carboxyl, sulfoxyl (= SO_3H);

R_5 is R_4; or

R_4 and R_5 together are an aromatic ring.

4,143,098

CDB RUBBER MODIFIED THERMOPLASTICS

Raymond F. Murphy, Whippany, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Mar. 18, 1976, Ser. No. 668,083

Int. Cl.[2] C08L *9/00*

U.S. Cl. 260—888 **9 Claims**

1. An impact resistant elastomer grafted styrene or styrene-acrylonitrile polymeric thermoplastic composition, the elastomer being a conjugated diene butyl copolymer consisting of 85 to 99.5% by weight of a C_4–C_7 isoolefin and 15 to 0.5% by weight of a conjugated C_4–C_{14} diolefin, said copolymer having randomly distributed sites of conjugated diene unsaturation.

4,143,099

METHOD OF PREPARING A THERMOPLASTIC ELASTOMERIC BLEND OF MONOOLEFIN COPOLYMER RUBBER AND POLYOLEFIN RESIN

David J. Duncan, Boksburg, South Africa, assignor to Uniroyal Limited, Midlothian, Scotland

Filed May 10, 1976, Ser. No. 684,982

Claims priority, application United Kingdom, May 12, 1975, 19793/75

Int. Cl.[2] C08L *23/00*

U.S. Cl. 260—897 A **18 Claims**

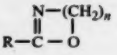
1. A method of preparing a thermoplastic elastomeric blend comprising mixing from 75 to 10 parts by weight of monoolefin copolymer rubber with correspondingly from 25 to 90 parts by weight of polyolefin resin having tertiary hydrogen and a free radical generating peroxide curing agent therefor having a ten hour half-life temperature of from not less than 50° C. to less than 100° C., the amount of the active constituent of the curing agent in the blend not exceeding 1 part by weight per 100 parts of said rubber and resin together, masticating and shearing the mixture at an elevated temperature sufficient to produce a semi-cure of the rubber but below the temperature of melting of the polyolefin resin, and completing the said semi-cure before the onset of melting of the polyolefin resin thereby ensuring that once the polyolefin has melted the level of free radicals remaining in the mixture is not sufficient to cause substantial degradation of the polyolefin as evidenced by stickiness, the final temperature reached by the mixture after completing the said semi-cure being sufficient to melt the resin and form a uniform blend.

4,143,100
GRAFT COPOLYMERS CONTAINING POLYOXAZOLINE AND POLYOXAZINE, AND THE PREPARATION THEREOF

Donald N. Schulz, Hartville, and Prakash D. Trivedi, Akron, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed May 16, 1977, Ser. No. 796,911
Int. Cl.[2] C08G *259/04, 253/00*
U.S. Cl. 260—899 **17 Claims**

1. A graft copolymer composition, comprising;
the reaction product of a poly(vinyl chloride) backbone polymer having allylic chloride groups therein and monomers forming a pendant graft polymer,
said monomers having the formula



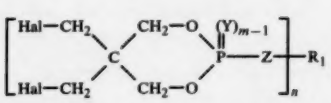
wherein R is an alkyl group having from 1 to 15 carbon atoms, a cycloalkyl group having from 4 to 15 carbon atoms, an aryl group having from 6 to 15 carbon atoms, combinations thereof, or hydrogen, and wherein n is 2 or 3,
the amount by weight of said pendant graft polymer ranging from about 0.5 percent to about 90 percent based upon the total weight of said graft copolymer, the number average molecular weight of said poly(vinyl chloride) backbone ranging from about 500 to about 500,000,
the amount of said allylic chloride groups in said backbone polymer ranging from about 0.1 percent to about 5 percent by weight,
said graft polymer substituted for said chlorine atom of said allylic chloride group of said backbone polymer.

4,143,101
5,5-BIS(HALOMETHYL)1,3,2-DIOXAPHOSPHORINANE COMPOUNDS

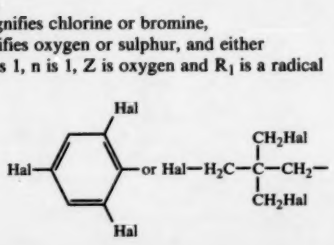
Horst Mayerhoefer, Oberwil, and Rainer Wolf, Allschwil, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Filed Sep. 14, 1971, Ser. No. 180,498
Claims priority, application Switzerland, Sep. 25, 1970, 14264/70; Jan. 26, 1971, 1119/71; Jul. 23, 1971, 10879/71
Int. Cl.[2] C07F *9/15*
U.S. Cl. 260—927 R **26 Claims**

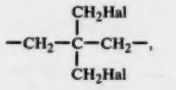
1. A compound of the formula

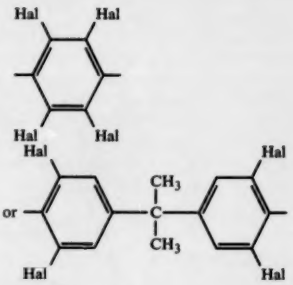


in which
Hal signifies chlorine or bromine,
Y signifies oxygen or sulphur, and either
(a) m is 1, n is 1, Z is oxygen and R_1 is a radical

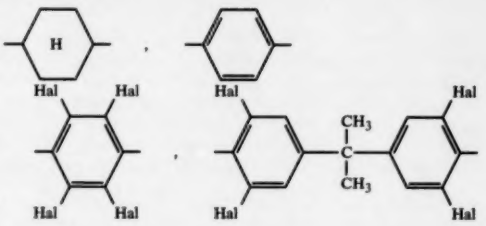


in which Hal is as defined above, or
(b) m is 1, n is 2, Z is oxygen and R_1 is a radical

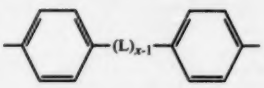




in which Hal is as defined above, or
(c) m is 2, n is 1, Z is oxygen and R_1 is alkyl of 1 to 18 carbon atoms, alkyl of 1 to 6 carbon atoms substituted by up to 3 chlorine or bromine atoms, phenyl, diphenyl, α-naphthyl, β-naphthyl, phenyl substituted by up to 5 chlorine or bromine atoms, or cyclohexyl, or
(d) m is 2, n is 2, Z is oxygen and R_1 is a radical



in which Hal is as defined above or



in which L signifies $-CH_2CH_2-$,

oxygen, sulphur or $-SO_2-$, and x is 1 or 2.

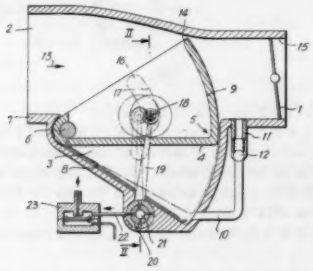
4,143,102
CONTROL ARRANGEMENT FOR MIXTURE COMPRESSING COMBUSTION ENGINES

Hans-Jürgen Müller, Gelsenkirchen, and Asoke Chattopadhayhay, Neuss-Norf, both of Fed. Rep. of Germany, assignors to Pierburgh GmbH & Co. KG, Neuss, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 750,895, Dec. 15, 1976, abandoned. This application Jun. 6, 1978, Ser. No. 913,210
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1975, 2557968
Int. Cl.[2] F02M *69/00*
U.S. Cl. 261—50 A **7 Claims**

1. A control arrangement for air-fuel mixture compressing injection combustion engines, comprising: an air quantity metering arrangement for metering air quantity in relation to fuel quantity; an arbitrarily actuated butterfly valve; an air suction line having a pivotable flap upstream from said arbitrarily actuated butterfly valve; spring means for urging said flap into a closing position; said flap being located outside the flow cross

section in a wall of said suction line, said flap responding to a difference of pressures acting upstream and downstream of said flap, said flap controlling means for metering fuel quantity; said flap having a part corresponding to a pivotable wall of a chamber located outside the flow cross section of the air suction line and being connected rigidly with a region of said flap determining the air flow cross section; connecting means from said chamber to said suction line downstream of said flap; said flap having a support axis located upstream on the end of said



flap facing away from said flap region; a wall extending between said flap region and said support axis; said wall having an effective working surface larger than the flow cross section of said air suction line; fuel quantity metering means; lever means located on an axis of said fuel quantity metering means; roller means for guiding said lever means; said flap having at least one side wall with a curved track for guiding said roller means and positioning said fuel quantity metering means by said lever means.

4,143,103

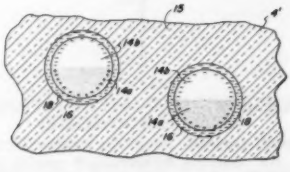
METHOD OF MAKING A TWISTING BALL PANEL DISPLAY

Nicholas K. Sheridon, Saratoga, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed May 4, 1976, Ser. No. 683,436

Int. Cl.² B29C *6/02*

U.S. Cl. 264—4 **5 Claims**



1. A method of making an optical display panel comprising the steps of:

thoroughly mixing a plurality of solid, optically anisotropic particles with a non-solid material capable of being cured to a solid state to provide a mixture of said particles and said material,

curing said mixture to solidify said material whereby said particles are trapped within a slab of said material, and

dispersing said slab with said particles trapped therein into a bath of a dielectric plasticizer which is absorbed more readily by said solidified material than by said particles whereby said solidified material swells to create plasticizer-filled voids around said particles such that said particles can have rotational movement but substantially no translational movement within said slab.

4,143,104

REPAIRING DAMAGED REFRACTORY WALLS BY GUNNING

Jan T. van Konijnenburg, Castricum, and Johannes A. M. Butter, Heemskerk, both of Netherlands, assignors to Hoogovens Ijmuiden, B.V., Ijmuiden, Netherlands

Continuation of Ser. No. 608,397, Aug. 27, 1975, abandoned, which is a continuation of Ser. No. 401,028, Sep. 26, 1973, abandoned. This application Jan. 12, 1977, Ser. No. 758,798

Claims priority, application Netherlands, Oct. 9, 1972, 7213626

Int. Cl.² F27D *1/16*

U.S. Cl. 264—30 **1 Claim**

1. A method for repairing a damaged coke-oven wall comprising applying a gunning composition containing about 30% water and the remainder being solid material containing 75 to 80% SiO_2 as Cristobalite or Trydenite, 7 to 12% Borax ($Na_2B_4O_7 \cdot 10\ H_2O$) as a binder, 4 to 8% ground window glass and 5.5 to 10% Bentonite to the damaged wall portion or portions while the said portion or portions are at elevated temperatures and vitrifying the binder on contact with the wall portion or portions at at least the boundary surfaces, said composition being selected in accordance with the composition of the main component of the refractory wall.

4,143,105

ROD FOR SUPPORTING PLANTS AND PROCESS FOR ITS MANUFACTURE

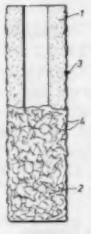
Claus Hentschel, Cologne; Wulf von Bonin; Joachim Gehring, both of Leverkusen, and Dietrich Hardt, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 28, 1977, Ser. No. 782,473

Claims priority, application Fed. Rep. of Germany, Apr. 17, 1976, 2617020

Int. Cl.² B29D *27/00*

U.S. Cl. 264—51 **3 Claims**



1. A process for the manufacture of a rod comprising foaming a thermoplast by a blowing agent and producing bark-like protuberances by tearing and bursting during extrusion wherein the temperature in the extruding apparatus is from 5° to 30° C. above the temperature conventionally used to produce an extruded foam having a smooth surface; and wherein a blowing agent in the amount of 1 to 5% by weight, based on the thermoplast, is added; the temperature in the die being kept substantially constant within ±3° C.; and the die having a sharp edged lip.

4,143,106

CONTINUOUS FLOOD FOAMING OF THERMOPLASTIC RESIN

Brenton S. Coyne, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

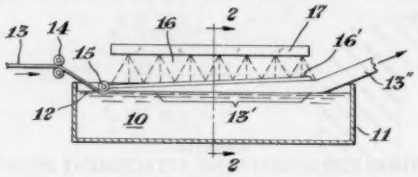
Filed Aug. 15, 1977, Ser. No. 824,882

Int. Cl.² B29D *27/00*

U.S. Cl. 264—51 **9 Claims**

1. In a continuous method of producing foamed resin products wherein a heat foamable thermoplastic resin is heated in

part and supported by floating upon a body of heat transfer liquid that is at a temperature at or above the foaming temperature of the foamable thermoplastic resin, the resin being concurrently heated from above, whereby the foamable resin is heated to foaming temperature and foamed, and the resulting foamed resin product is removed from the body of heat transfer liquid, which liquid has greater density than the foaming and foamed resin product,



the improvement which comprises heating the upper surface of the foamable and foaming resin by flooding said upper surface with a blanket of a heat transfer liquid at substantially the same temperature as the supporting body of heat transfer liquid.

4,143,107

SILICON NITRIDE-BASED SINTERED MATERIAL AND METHOD FOR MANUFACTURING THE SAME

Takashi Ishii, Tokyo; Katsutoshi Nishida, Yokohama; Michiyasu Komatsu, Yokohama, and Akihiko Tsuge, Yokohama, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Division of Ser. No. 590,073, Jun. 25, 1975, Pat. No. 4,046,580. This application Feb. 26, 1976, Ser. No. 661,540

Claims priority, application Japan, Jun. 28, 1974, 49-73283; Jul. 5, 1974, 49-76430

Int. Cl.[2] **C04B** *35/64, 33/32, 35/58, 35/50*

U.S. Cl. 264—65 **3 Claims**

1. In a method of manufacturing a silicon nitride-based sintered material comprising molding and sintering crystalline compounds prepared from silicon nitride and at least one rare earth metal oxide the improvement which comprises embedding the molded mass of silicon nitride and at least one rare earth metal oxide in a powder comprising aluminum nitride and sintering said molded mass.

4,143,108

METHOD OF INJECTION MOLDING NITRILE ARTICLES

I. Luis Gomez, Longmeadow, Mass., and Edward Foden, North Granby, Conn., assignors to Monsanto Company, St. Louis, Mo.

Filed Aug. 26, 1976, Ser. No. 717,590

Int. Cl.[2] **B29B** *1/06;* **B29F** *3/06*

U.S. Cl. 264—102 **11 Claims**

1. In the method of forming a thermoplastic article from high nitrile polymers by injection molding, the improvement comprising charging a polymer in powder form containing from about 50 to about 90% by weight of nitrile monomer units calculated as acrylonitrile and based on the total polymer weight to a vacuum hopper system wherein vacuum is applied from which it is fed to a reciprocating screw injection molding machine for formation of said article, said vacuum resulting in a reduction of at least about ten percent in the recovery time of the screw in comparison with recovery time under the same conditions without vacuum.

4,143,109

METHOD OF MAKING MEDICAL GLOVE

Glenn F. Stockum, Arlington, Tex., assignor to Arbrook, Inc., Arlington, Tex.

Continuation-in-part of Ser. No. 705,385, Jul. 15, 1976, abandoned. This application Oct. 19, 1977, Ser. No. 843,605

Int. Cl.[2] **B29H** *3/042*

U.S. Cl. 264—112 **9 Claims**

1. The method of making a medical glove adapted to tightly conform to a wearer's skin and to be donned without the use of additional lubricants, comprising the steps of: dip-coating a first layer of natural rubber latex onto a glove form having the general contour of a human hand; dip-coating a second layer over said first layer, said second layer being a particulate suspension comprising an elastomeric material having particulate matter randomly distributed therethrough; the majority of said particulate matter having a size greater than the thickness of the elastomeric material in said second layer; applying heat to cure said layers so that said first and second layers are permanently bonded together and said particulate matter is securely embedded within said second layer with portions thereof extending outwardly beyond the surface of said elastomeric material; removing said glove from said form; and reversing said glove to position said particulate matter on the inner skin-contacting surface thereof; whereby, said particulate matter provides a lubricating means to facilitate donning of said glove without the use of additional lubricants.

4,143,110

METHOD OF AGGLOMERATING POLYTETRAFLUOROETHYLENE POWDER

Mituharu Morozumi, Yokohama; Masataka Arai, Kanagawa, and Shigeru Iseki, Tokyo, all of Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed Jul. 8, 1977, Ser. No. 813,867

Int. Cl.[2] **B01J** *2/14*

U.S. Cl. 264—117 **16 Claims**

1. A method of agglomerating polytetrafluoroethylene molding powder, which comprises:

(a) agglomerating a finely ground polytetrafluoroethylene molding powder by subjecting said powder having an average particle diameter of less than 100 μm to high speed agitation in the presence of a medium consisting of water and a hydrophobic organic liquid, of which less than 15 wt.% is miscible with water at the temperature of agglomeration, at a volumetric ratio of the organic liquid to water of 2:1 to 1:2 and a ratio of 0.5 to 1 liter of the medium per 1 Kg of said powder; and

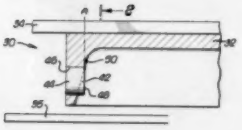
(b) separating the resulting agglomerates from the medium.

4,143,111

METHOD OF MATCHED-MOLD FORMING FROM A HOT SHEET OF POLYSTYRENE FOAM, AN OPEN VESSEL HAVING AN OUTWARD SLOPING FLAT SIDE WALL WITH AT LEAST ONE HOLE IN SAID SIDE WALL

Jere F. Irwin, 1702 S. 24th Ave., Yakima, Wash. 98902

Filed Apr. 24, 1975, Ser. No. 571,275
Int. Cl.[2] B29C *17/10*; B29D *27/00*
U.S. Cl. 264—156 **2 Claims**



1. A method of matched-mold forming from a hot sheet of polystyrene foam an open vessel having an outwardly sloping flat side wall with at least one hole in said side wall, said hole being formed during the molding of said vessel and without requiring the aid of accessory power punching equipment, said method comprising the steps of:

providing mounted vertically reciprocating aligned male and female matched molds which when brought together define the internal and external surfaces of said vessel;

providing on those portions of said matched molds opposite which it is desired said hole be formed, wedge shaped half-plugs which are in slidably offset relation with each other and form a pair of scissors and a whole plug when moved into conjunction with each other by the reciprocation of said molds;

advancing a hot sheet of polystyrene foam between said matched molds; and

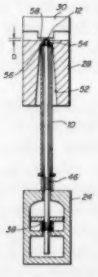
reciprocating said molds to form said vessel and cause said half-plugs to penetrate said sheet to produce said whole plug and expel the hot foam from the space occupied by said whole plug into the areas of said vessel side wall immediately adjacent said hole, thereby increasing the density of said areas of said side wall.

4,143,112

METHOD FOR MAKING PROBE COVERS FOR ELECTRONIC THERMOMETERS

Robert B. Turner, Weymouth, Mass., assignor to Johnson & Johnson, New Brunswick, N.J.

Filed May 30, 1974, Ser. No. 474,419
Int. Cl.[2] B29C *27/22*; B29F *5/00*
U.S. Cl. 264—249 **1 Claim**



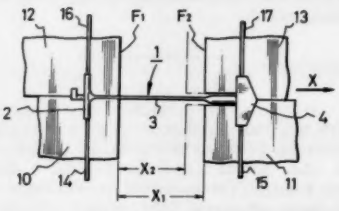
1. A method for forming an electronic thermometer probe cover comprising: providing a closed, metal tip member having a radially extending flange; providing a thermoplastic tube; pressing said tip member into engagement with one end of said tube; disposing a forming die about said one end for curling the end of the tube engaged with the tip inwardly about the tip; applying heat directly to said tip to heat the tip to soften the end of the tube engaged with the tip and, to cause the tube end to be reformed about the flange in an inwardly curled manner, thereby securing said tip to said tube, and forming said probe cover.

4,143,113

METHOD FOR STRETCHING ATTACHMENT DEVICES AT HIGH SPEEDS

Tadashi Suzuki, Saitama, Japan, assignor to Sato Gosei Co., Ltd., Tokyo, Japan

Filed May 11, 1977, Ser. No. 796,026
Int. Cl.[2] B29C *17/02*
U.S. Cl. 264—291 **8 Claims**



1. A method for the high-speed stretching of synthetic resin attachment devices, the attachment devices including a head, a cross-bar and a filament connecting said head and cross-bar to each other, said method comprising the steps of:

applying a force to the attachment device for separating said head and cross-bar from each other at a high-speed while said filament is in a heated state, the head and cross-bar being gripped and held by respective gripping means therefor, thereby stretching said filament, immediately thereafter while the attachment device is still in a heated state applying a relaxing action to the stretched filament to permit the length of said filament to shorten from 10 to 40% to prevent deformation of said cross-bar caused by internal stresses developed during the high-speed separation of said head from said cross-bar, and thereafter removing the stretched attachment device from said gripping means.

4,143,114

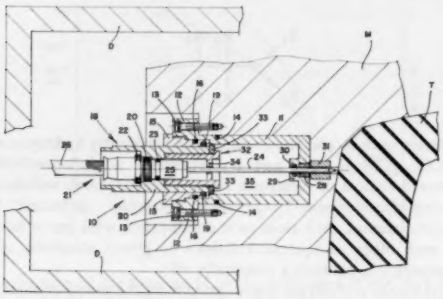
PROBE INJECTION SYSTEM FOR A TIRE CURING PROCESS

Thomas W. Smith, Fort Myers Beach, Fla., and Jeffrey N. Bibbee, Mogadore, Ohio, assignors to McNeil Corporation, Akron, Ohio

Division of Ser. No. 835,646, Sep. 22, 1977, Pat. No. 4,115,046. This application Jun. 14, 1978, Ser. No. 915,315
Int. Cl.[2] B29H *5/02*
U.S. Cl. 264—326 **4 Claims**

1. A method of injecting a temperature sensitive probe into a tire to be vulcanized in a mold, the mold having a probe injecting assembly associated therewith and being heated at least in part by pressurized steam in a cavity adjacent thereto,

the assembly being exposed to the cavity and operable by the pressurized steam in the cavity, comprising the steps of placing



the tire in the mold, and injecting the probe by introducing pressurized steam into the cavity.

4,143,115

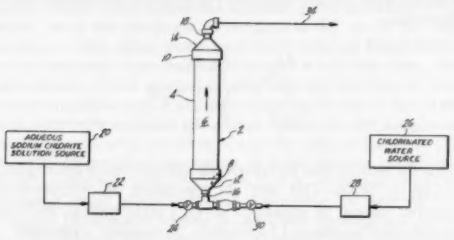
CHEMICAL GENERATION APPARATUS

William J. Ward, Lenexa, and Kenneth E. Gasper, Overland Park, both of Kans., assignors to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 651,685, Jan. 23, 1976, Pat. No. 4,013,761. This application Feb. 11, 1977, Ser. No. 767,915

Int. Cl.[2] B01J *7/02;* **C01B** *11/02*

U.S. Cl. 422—113 **2 Claims**



1. An apparatus comprising:

(a) a cylindrical chlorine dioxide generation vessel, the inner surfaces of said vessel being made of polyvinyl chloride, fluid-mixing means within said generation vessel, and said vessel having walls defining a confined space for fluid flow in an overall mean flow direction approximately parallel to said walls;

(b) at least two reducing couplings, the inner surfaces of said couplings being made of polyvinyl chloride, at least one of said couplings being located at one end of said vessel and attached to said walls to form an inlet and at least one other of said couplings being located at the other end of said vessel and attached to said walls to form an outlet, said couplings being attached to said vessel walls by solvent-weld and having surfaces which reduce the cross-sectional area of said confined space defined by said vessel walls, said coupling surfaces forming an angle of at least 110° with said vessel walls;

(c) a first injection check valve connected to said inlet;

(d) an aqueous sodium chlorite solution source;

(e) metering means connecting said aqueous sodium chlorite solution source to said injection check valve;

(f) a second injection check valve connected to said inlet;

(g) a chlorinated water source, said chlorinated water having a pH between about 2 and about 9;

(h) metering means connecting said chlorinated water source with said second injection check valve, and

(i) an additional water source connected to said inlet.

4,143,116

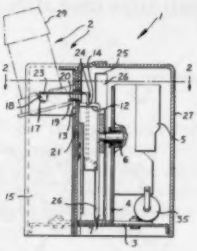
CONTACT LENS STERILIZING APPARATUS

Robert J. Meltzer, Williamsville, N.Y., assignor to American Optical Corporation, Southbridge, Mass.

Filed Aug. 18, 1976, Ser. No. 715,593

Int. Cl.[2] A61L *3/00, 13/00*

U.S. Cl. 422—116 **8 Claims**



1. A sterilizer for contact lenses which comprises, a frame having capsule mounting means, a capsule for receiving contact lenses and a sterilizing solution having a neutralizer near one end and having pivot means near the other end, said pivot means being adapted to pivotally cooperate with said mounting means, catch means for releasably holding said capsule in a treating position with a major portion of the capsule above said pivot means to immerse contact lenses in a sterilizing solution while said neutralizer is disposed above and out of contact with said sterilizing solution said mounting means holding said capsule tended toward inversion for neutralization when in said position, timing means operably connected to said catch for releasing said capsule to swing about said pivot means to a substantially inverted position and effect contact between said solution and neutralizer.

4,143,117

ELASTIC MOUNTING FOR A CATALYTIC CONVERTER IN AN INTERNAL COMBUSTION ENGINE

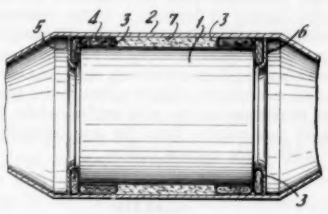
Gerhard Gaysert, Esslingen, Fed. Rep. of Germany, assignor to J. Eberspacher, Esslingen, Fed. Rep. of Germany

Filed Dec. 14, 1973, Ser. No. 424,739

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1972, 2261663

Int. Cl.[2] B01J *8/00;* **F01N** *3/15*

U.S. Cl. 422—179 **10 Claims**



1. A catalytic reactor for purifying exhaust gases from an internal combustion engine comprising a cylindrical tubular casing, a monolithic catalyst positioned within said casing, and at least two hollow rings formed of a metallic resilient material filled with a mass of resilient material and positioned within and in contact with said cylindrical tubular housing and arranged to elastically mount the monolithic catalyst within and to space it from said casing, and said hollow rings formed of a

metallic resilient material each comprising a metal foil skin forming a closed cavity.

4,143,118

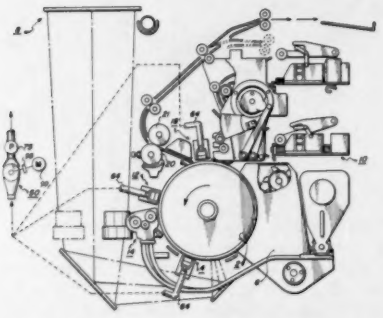
APPARATUS AND METHOD FOR OZONE REDUCTION IN ELECTROSTATOGRAPHIC REPRODUCTION EQUIPMENT

Jean W. Laing, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 8, 1977, Ser. No. 822,494

Int. Cl.[2] B01D *53/34*; G03B *27/16*; B01J *8/24*

U.S. Cl. 423—210 **9 Claims**



8. A method for neutralization of ozone laden vapors produced during corona discharge of an electrostatographic reproduction system comprising:

(a) providing means for collection and transport of ozone laden vapors generated during operation of said system;

(b) providing an ozone neutralization chamber which includes a granular bed filter reactor having an inlet and an exhaust orifice, a perforated gas permeable member extending across the area of each such orifice, a bed of catalytically active granular material loosely covering the gas permeable plate of the inlet orifice, means for impelling ozone laden vapors into said chamber through the gas permeable member proximate to the inlet orifice, and means for purging particulates from the gas permeable member proximate to the exhaust end of the reactor by reorientation of the gas permeable member relative to inlet and exhaust orifices of the reactor whereby at least a portion of the gas permeable member proximate to the exhaust orifice is exposed to gases from the inlet orifice thereby back flusing entrapped particulates from said member; and

(c) impelling ozone laden vapors into said chamber through the gas permeable plate proximate to the inlet orifice, thereby causing (i) fluidization of the catalytically active granular material, (ii) contact of said material with the ozone laden vapors resulting in substantial reduction of ozone content generated during operation of said system and (iii) entrapment of particulates in the gas permeable plate proximate to the inlet orifice while flushing entrapped particulates from the gas permeable member proximate to the exhaust orifice.

4,143,119

METHOD AND COMPOSITION FOR INHIBITING THE CORROSION OF FERROUS METALS

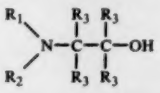
Robert G. Asperger, Midland, Mich.; Leroy S. Krawczyk, and Billy D. Oakes, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 648,620, Jan. 12, 1976, abandoned. This application Jun. 16, 1977, Ser. No. 807,089

Int. Cl.[2] B01D *53/34*

U.S. Cl. 423—226 **10 Claims**

1. A corrosion inhibiting composition for ferrous metal and its alloys, in contact with acid-gas stripping absorbent solutions selected from the group consisting of alkanolamines having the formula:



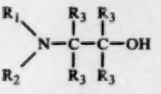
wherein each R_1 and R_2 represents independently hydrogen, or $-C(R_3)_2C(R_3)_2-OH$ and R_3 represents an independently selected radical of hydrogen or C_{1-3} alkyl radical, sulfolane, (tetrahydrothiophene-1,1-dioxide), potassium carbonate or diglycolamines, each alone or in combination with one or more of each other as aqueous solutions or glycol solutions, said compositions consisting essentially of:

(a) a source of copper ion selected from the group consisting of copper metal, copper sulfide and copper salts,

(b) a source of sulfur atoms selected from the group consisting of 1) sulfur, or 2) hydrogen sulfide and/or COS in combination with an oxidizing agent which will produce in solution the sulfur atom, at least some of which is the polysulfide, under the conditions of operation in an acid-gas stripping plant which employs thermal regeneration techniques for separating the combined chemisorbed acid-gas from the stripping absorbent,

and (c) a solvent for (a) and (b) selected from the aforeenumerated absorbent solutions.

10. In the method for removing acid-gases from natural and synthetic gases containing the same by contacting the acid-gas containing gases with a solution of a gas absorbing solution selected from the group consisting of alkanolamines having the formula:



wherein each R_1 and R_2 represents independently hydrogen, or $-C(R_3)_2C(R_3)_2-OH$ and R_3 represents an independently selected radical of hydrogen or C_{1-3} alkyl radical, sulfolane, (tetrahydrothiophene-1,1-dioxide), potassium carbonate or diglycolamines, each alone or in combination with one or more of each other as aqueous solutions or glycol solutions, and freeing the medium of the acid-gases by heating, the improvement of which consists of maintaining in solution in said medium the composition of claim **1** thereby to reduce the corrosive attack of the acid-gases on the metallic components of the equipment in which the acid-gas removal and regeneration of medium is carried out.

4,143,120

METHOD OF REMOVING NITRIC OXIDE FROM GASES

Paul A. Sermon, Cowley, England, assignor to Johnson, Matthey & Co., Limited, London, England

Continuation-in-part of Ser. No. 553,312, Feb. 26, 1975, abandoned. This application Jan. 10, 1977, Ser. No. 758,335

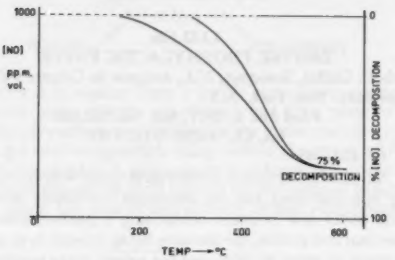
Claims priority, application United Kingdom, Mar. 4, 1974, 9684/74

Int. Cl.[2] B01D *53/34*

U.S. Cl. 423—239 **4 Claims**

1. A process for removing NO from air or other gaseous medium which contains NO, said process comprising

contacting said air or gaseous medium at a temperature of 450° C. or above with a mixture of platinum metal and a



bronze of the formula H_xWO_y, wherein x is less than 0.5 and y is a value between 2 and 3.

4,143,121

CONTINUOUS PRODUCTION OF PURE PHOSPHINE

Jürgen Stenzel; Gero Heymer, and Christian May, all of Erftstadt-Liblar, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 13, 1977, Ser. No. 815,161

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1976, 2632316

Int. Cl.² C01B *25/00*

U.S. Cl. 423—299 **9 Claims**

1. In the process for the continuous production of phosphine by reacting elemental yellow phosphorus with a concentrated aqueous alkali metal hydroxide solution in the presence of an alcohol, with the exclusion of oxygen, at 44° to 90° C., the phosphorus and alkali metal hydroxide solution being introduced separately from one another into a reaction zone, the improvement which comprises effecting the reaction in two separate reaction steps A and B by reacting in step A the alkali metal hydroxide solution and about 90 percent by weight of the phosphorus with agitation in a molar ratio of 0.7 : 1 to 0.9 : 1, with the resulting formation of pure gaseous phosphine which is collected; delivering from step A, simultaneously the remaining liquid phase material containing the rest of the unreacted phosphorus to step B and there reacting said unreacted phosphorus with further aqueous alkali metal hydroxide solution and collecting the resulting gaseous reaction products separately from the pure gaseous phosphine collected in step A.

4,143,122

METHOD OF PROCESSING THE RESIDUAL GASES FROM CLAUS PLANTS OR OTHER SULFUR-PRODUCING PLANTS

Dieter Laufhütte, Recklinghausen, and Günter Gronert, Dortmund-Kirchlinde, both of Fed. Rep. of Germany, assignors to Firma Carl Still and Eschweiler Bergwerks-Vereins, both of, Fed. Rep. of Germany

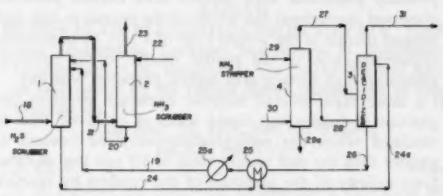
Filed Sep. 1, 1977, Ser. No. 829,656

Claims priority, application Fed. Rep. of Germany, Sep. 3, 1976, 2639651

Int. Cl.² C01B *17/16*

U.S. Cl. 423—574 R **10 Claims**

1. A method for processing the residual waste gases containing sulfur, hydrogen sulfide and sulfur oxides coming from a sulfur-producing installation comprising, heating the residual gases and a mixture of gases containing ammonia to the decomposition temperature of ammonia to produce a hot gas mixture, passing the hot gas mixture into association with an agent so as to decompose the ammonia to form nitrogen and active hydrogen, and so as to convert the sulfur and sulfur oxides into hydrogen sulfide to form a hydrogen sulfide-containing mixture wherein a portion of the active hydrogen produced by decomposing the ammonia aids in forming the hydrogen sulfide, cooling the hydrogen sulfide-containing mixture, spraying the cooled hydrogen sulfide-containing mixture with an aqueous solution which removes hydrogen sulfide from the hydrogen sulfide containing mixture to produce a hydrogen



sulfide containing liquor and to release a hydrogen-containing gas formed from the remaining active hydrogen suitable for undergrate firing which is low in sulfur, sulfur compounds and ammonia, the mixture of gases containing ammonia being a product of a coke-oven gas processing plant.

4,143,123

PROCESS FOR THE EXCHANGE OF HYDROGEN ISOTOPES BETWEEN STREAMS OF GASEOUS HYDROGEN AND LIQUID WATER

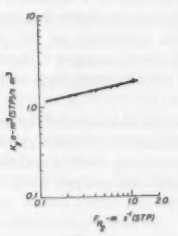
John P. Butler; John H. Rolston; James den Hartog, all of Deep River; Fred W. R. Molson, Petawawa, and John W. Goodale, Deep River, all of Canada, assignors to Atomic Energy of Canada Limited, Ottawa, Canada

Continuation-in-part of Ser. No. 733,422, Oct. 18, 1976, abandoned. This application Aug. 14, 1978, Ser. No. 933,550

Claims priority, application Canada, Jun. 25, 1976, 255751

Int. Cl.² C01B *5/02*

U.S. Cl. 423—580 **6 Claims**



1. In the process for the exchange of hydrogen isotopes between streams of gaseous hydrogen and liquid water, comprising:

(a) bringing the streams into contact with one another, in the path of a hydrophobic, hydrogen gas and water vapour receptive catalyst in the form of at least one catalytically active mass comprising a porous matrix of polytetrafluoroethylene with exposed, partially platinized high surface area carbon particles dispersed in the porous polytetrafluoroethylene matrix, the streams being brought into contact with one another at an operating temperature in the range 273 to 573K, with one of the streams containing a concentration of a hydrogen isotope in excess of that which it would contain when the liquid water-gaseous hydrogen streams are in isotopic equilibrium at the operating conditions of temperature and mass flow rates of the streams and the other being a deficient stream and containing a concentration of that hydrogen isotope which is less than that which it would contain when the liquid water-gas system is in equilibrium at said operating conditions so that the deficient stream is enriched by transfer of the

hydrogen isotope from the other stream by the said catalytically active mass and

(b) recovering the said stream enriched in the hydrogen isotope, and wherein the improvement comprises,

(c) the said at least one catalytically active mass has the partially platinized high surface area carbon particles dispersed throughout the whole of the porous matrix and present therein in the weight ratio of 1:1 to 3:1 of polytetrafluoroethylene of the porous matrix to the partially platinized high surface area carbon particles, whereby

(d) a more rapid overall isotopic exchange between the gaseous hydrogen and liquid water is achieved than is obtained when the polytetrafluoroethylene content is greater than the said weight ratio of 3:1 and loss of catalytic activity of the platinum of the catalyst by contact with liquid water is less than is obtained when the polytetrafluoroethylene content is less than said weight ratio of 1:1.

4,143,124

ANTIGEN-ANTIBODY ANALYSIS WITH SOLID PHASE RF AND Clg

Pierre L. Masson, Brussels, and Joseph F. Heremans, Leuven, both of Belgium, assignors to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed May 19, 1975, Ser. No. 578,699

Claims priority, application United Kingdom, May 20, 1974, 22377/74

Int. Cl.[2] G01N *31/00, 33/16*

U.S. Cl. 424—12 **4 Claims**

1. A method for quantitatively analyzing an aqueous biological fluid sample for an antibody-antigen complex therein, comprising:

(a) forming a mixture of the sample with a substance selected from the group consisting of rheumatoid factor and complement component, said substance being convalently bonded to particles of a naturally-occurring solid phase substrate which is insoluble in aqueous fluids;

(b) allowing the substance on the particles selectively to react with antibody-antigen complex present in the mixture thereby selectively to bind said complex to said particles; and

(c) assaying the particles or the remainder of the mixture to determine the amount of antibody-antigen complex bound thereto or remaining therein and thereby determining the amount of antibody-antigen complex present in the sample.

4,143,125

CALCULUS-INHIBITING COMPOSITIONS AND METHOD

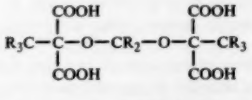
David R. Dyroff, Creve Coeur, Mo., and Walton F. Suchanek, Jr., Belleville, Ill., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 27, 1976, Ser. No. 754,371

Int. Cl.[2] A61K *9/68, 7/16*

U.S. Cl. 424—48 **17 Claims**

1. An oral composition effective in inhibiting formation of dental calculus, said composition comprising (1) an alkylenedioxybis(alkyl-propanedioic acid) compound selected from the group consisting of acids having the structural formula:



wherein R is hydrogen or lower alkyl and each R can be the same as or different from other R in said formula, and pharmaceutically acceptable salts of said acids and (2) a carrier suitable for use in the oral cavity, said compound being present in said composition in amount and concentration sufficient to substantially inhibit formation of dental calculus.

4,143,126

DENTAL PROPHYLACTIC PASTE

Maria C. Gaffar, Somerset, N.J., assignor to Colgate Palmolive Company, New York, N.Y.

Filed Jul. 1, 1977, Ser. No. 812,030

Int. Cl.[2] A61K *7/16, 7/18*

U.S. Cl. 424—49 **6 Claims**

1. A fluoride-free dental prophylactic paste which is substantially non-spattering and has improved flowability through a nozzle under low pressure comprising a pumice abrasive, a humectant and gelatin, the abrasive being present in an amount by weight of about 40–60% and the gelatin being present in an amount by weight of about 0.01 to 10.0% which is sufficient to impart to said composition a viscosity of between 1200 and 1400 centipoises at a temperature between 30° and 40° C.

4,143,127

QUATERNARY COMPOUNDS HAVING ANTI-MICROBIAL ACTIVITY

Robert A. Bauman, New Brunswick, N.J., assignor to Colgate Palmolive Company, New York, N.Y.

Division of Ser. No. 606,138, Aug. 20, 1975, abandoned, which is a division of Ser. No. 400,097, Sep. 24, 1973, Pat. No. 3,928,411, which is a continuation of Ser. No. 39,536, May 21, 1970, abandoned. This application Jun. 2, 1977, Ser. No. 802,762

Int. Cl.[2] A61K *7/22, 31/14;* **C07C** *87/30*

U.S. Cl. 424—54 **4 Claims**

1. A chemical compound having the structural formula:

$$[RS(CH_2)_nN^+(CH_3)_2R']X^-$$

wherein R is 1-adamantyl, R' is a long chain alkyl group of 10 to 18 carbon atoms, n is an integer 1 to 3 and X is an anion.

3. A pharmaceutical composition comprising about 0.1–10% by weight of a chemical compound having the structural formula:

$$[RS(CH_2)_nN^+(CH_3)_2R']X^-$$

wherein R is 1-adamantyl, R' is a long chain alkyl group of 10 to 18 carbon atoms, n is an integer 1 to 3 and X is an anion admixed with a pharmaceutical vehicle, wherein said pharmaceutical vehicle comprises an inert carrier and a surface active agent in which said compound is dissolved or a solid inert carrier.

4,143,128

ORAL COMPOSITIONS FOR CALCULUS RETARDATION

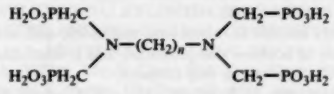
Keun Y. Kim, Chesterfield, and Marvin M. Crutchfield, St. Louis, both of Mo., assignors to Colgate Palmolive Company, New York, N.Y.

Continuation of Ser. No. 661,220, Feb. 25, 1976, abandoned, which is a continuation of Ser. No. 569,506, Apr. 18, 1975, abandoned, which is a continuation of Ser. No. 386,121, Aug. 6, 1973, abandoned, which is a continuation-in-part of Ser. No. 198,439, Nov. 12, 1971, abandoned. This application Jun. 10, 1977, Ser. No. 805,503

Int. Cl.[2] A61K *7/22*

U.S. Cl. 424—54 **14 Claims**

1. An oral mouthwash or toothpaste composition effective in inhibiting the formation of dental calculus without adversely affecting tooth structure comprising (1) a dental calculus inhibiting amount of at least about 0.01% of a polyamine polyphosphonate selected from the group consisting of those of the formula:



wherein n is a number from 1 to 10, or a pharmaceutically acceptable water soluble salt thereof; and (2) a paste or flavored mouthwash carrier suitable for use in the oral cavity, the pH of the oral composition being within the range of from about 5.0 to about 11.0, said composition being free of calcium abrasives which would yield enough soluble calcium to significantly impair the anticalculus activity of said polyphosphonate.

4,143,129

CEPHALEXIN TABLETS

Richard Marsden, Bisley, England, assignor to Lilly Industries Limited, London, England

Continuation of Ser. No. 731,193, Oct. 12, 1976, abandoned. This application Jan. 16, 1978, Ser. No. 869,982

Claims priority, application United Kingdom, Oct. 11, 1975, 41744/75

Int. Cl.[2] A61K *47/00, 31/79, 9/20*

U.S. Cl. 424—80 **4 Claims**

1. A pharmaceutical tablet comprised of:

(a) from about 90% to about 96 percent by weight of orally active cephalexin;

(b) from about 4 to about 10 percent by weight of excipients comprising:

(i) from about 2 to about 5 percent by weight of polyvinyl pyrrolidone having an average molecular weight of from about 500,000 to about 1,500,000;

(ii) from about 1.5 to about 5 percent by weight of a disintegrant selected from the group consisting of sodium starch glycolate, sodium carboxymethylcellulose, and a weakly acidic methacrylic acid-divinylbenzene copolymer zeolite; and

(iii) from about 0.3 to about 2 percent by weight of a pharmaceutically acceptable lubricant, and having

(c) a diametral crushing strength of from about 5.0 to about 15.0 Kg; and

(d) a disintegration time in distilled water of 15 minutes or less at 37° C.

4,143,130

METHOD FOR TREATING KIDNEY STONES

Anthony R. Imondi, Doylestown, and Richard L. Wolgemuth, Hatfield, both of Pa., assignors to Warren-Teed Laboratories, Inc., Columbus, Ohio

Filed Aug. 29, 1977, Ser. No. 828,397

Int. Cl.[2] A61K *31/78, 31/74*

U.S. Cl. 424—81 **8 Claims**

1. A method for decreasing urinary calcium content and increasing urinary phosphate content which comprises orally administering to a person whose urine contains insoluble calcium containing precipitates or has a propensity for forming calcium containing precipitates, an effective amount of an agent selected from the water soluble and lightly crosslinked colloidally water soluble homopolymers and copolymers of olefinically unsaturated carboxylic acids and their nontoxic pharmaceutically acceptable salts wherein said homopolymers and copolymers, if soluble have a degree of polymerization of from about 10 to about 100,000 and, if colloidally water soluble, have a swelling index of from about 10 to about 1500.

8. A composition for decreasing urinary calcium content and increasing urinary phosphate content which comprises a unit dosage of from about 10 mg. to about 400 mg./kg. of body weight of an agent selected from the water soluble and lightly crosslinked colloidally water soluble homopolymers and copolymers of olefinically unsaturated carboxylic acids containing at least one carbon-to-carbon olefin double bond and at least one carboxy group, wherein the polymers have a degree of polymerization in the range of from about 10 to about 100,000 and a swelling index of from about 10 to about 500 and the nontoxic, pharmaceutically acceptable salts thereof.

4,143,131

REMOVAL OF PLUTONIUM FROM HEPATIC TISSUE

Arthur Lindenbaum, Lockport, and Marcia W. Rosenthal, La Grange, both of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 29, 1974, Ser. No. 546,851

Int. Cl.[2] A61K *45/02*

U.S. Cl. 424—85 **4 Claims**

1. A method for removing intracellulary deposited plutonium from hepatic tissue comprising: introducing into the body and blood stream a solution of DTPA and introducing as an adjunct thereto a pyran copolymer, whereby the plutonium is removed from the hepatic tissue and is removed from the body by the normal body processes.

4,143,132

POLYANION FRACTION CONTAINING HEXOSAMINES

Fernando Fussi, Via Ugo Foscola 31, Lesmo (Milan), and Gianfranco Fedeli, Via Zanta 19, Milan, both of Italy

Filed Jun. 30, 1976, Ser. No. 701,736

Claims priority, application Italy, Jul. 3, 1975, 25065 A/75

Int. Cl.[2] A61K *35/38*

U.S. Cl. 424—104 **4 Claims**

1. A process for obtaining a fraction of natural polyanions from residual liquors of heparin extraction comprising adding an excess of 0.2 to 0.5% by weight, based on the liquors, of a quaternary ammonium base to form a precipitate, solubilizing the precipitate with a solution of a salt of a mono- or bi-valent cation, and then precipitating the fraction by adding a water miscible solvent.

4. The product prepared by the process of claim 1.

4,143,133

CLAUDOGENIC-INTERCEPTIVE NONAPEPTIDES

Theodore J. Foell, King of Prussia, and Richard W. A. Rees, Bryn Mawr, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Oct. 3, 1977, Ser. No. 838,502

The portion of the term of this patent subsequent to Nov. 16, 1993, has been disclaimed.

Int. Cl.[2] A61K *37/00;* **C08L** *37/00;* **C07C** *103/52*

U.S. Cl. 424—177 **11 Claims**

1. A compound of the formula:

L-p-Glu-L-His-L-Trp-L-Ser-L-Tyr-D-2-(cyclohexyl)Gly-Y-L-Arg-L-Pro-NHC_2H_5

in which Y is L-Leu or L-(N-methyl)-Leu or a non-toxic acid addition salt thereof.

4,143,134

HALO-PHOSPHONOPEPTIDES

Frank R. Atherton, Welwyn Garden City; Michael J. Hall; Cedric H. Hassall, both of Welwyn; Robert W. Lambert, Welwyn, and Peter S. Ringrose, Harston, all of England, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Jul. 13, 1977, Ser. No. 815,130

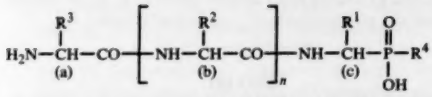
Claims priority, application United Kingdom, Jul. 21, 1976, 30347/76

The portion of the term of this patent subsequent to Apr. 5, 1994, has been disclaimed.

Int. Cl.[2] A61K *37/00;* **C07C** *103/52*

U.S. Cl. 424—177 **13 Claims**

1. Peptide derivatives of the formula



(I)

wherein R^1, R^2 and R^3 each is the characterising group of an α-amino acid of the type normally found in proteins selected from the group consisting of hydrogen, methyl, isobutyl, benzyl, 2-carboxyethyl and together with the adjacent CH and NH moieties form the ring structure of proline or $—CH_2X$ in which X is halogen with the proviso that at least one of R^1, R^2 and R^3 is $—CH_2X$; R^4 is hydroxy or methyl; n is zero, 1, 2 or 3; the configuration at the carbon atom designated as (a) when R^3 is other than hydrogen is L or D,L; the configuration at the carbon atom designated as (b) when R^2 is other than hydrogen is L or D,L; and the configuration at the carbon atom designated as (c) when R^1 is other than hydrogen is (R),

and pharmaceutically acceptable salts thereof.

8. A pharmaceutical preparation comprising an antibiotic potentiating effective amount of a peptide derivative of claim 1, an effective amount of an antibiotic capable of being potentiated by said peptide derivative of claim 1 and a compatible pharmaceutical carrier material.

4,143,135

ANTIBIOTIC PHOSPHONIC ACID DERIVATIVES AND PRODUCTION AND USE THEREOF

Yoshio Kuroda, Osaka; Masakuni Okuhara, Ikeda; Eiko Iguchi, Osaka; Hatsuo Aoki, Ikeda, and Hiroshi Imanaka, Mishima, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Jul. 27, 1977, Ser. No. 819,551

Claims priority, application United Kingdom, Jul. 27, 1976, 31339/76

Int. Cl.[2] **A61R** *31/16, 31/165;* **C07F** *9/38*

U.S. Cl. 424—211 **9 Claims**

1. Antibiotic FR-900098 and the pharmaceutically acceptable salts thereof, having the following characteristics:

(a) is effective in inhibiting the growth of various Gram-positive and Gram-negative bacteria; and as its monosodium salt,

(b) has the following elemental analyses:
C 27.74; H 5.03; N 6.66
(and the others: phosphorus and oxgen);

(c) has a melting point from 193° to 194° C. in the form of colorless prisms;

(d) has an optical rotation $[\alpha]_D^{25} = 0$ (c = 1.0, in water);

(e) has a characteristic infrared absorption spectrum as shown in the following, ν_{max}^{KBr} = 3450, 3400, 3350, 3100, 2930, 2800, 2420, 2320, 1615, 1570, 1495, 1450, 1420, 1370, 1310, 1280, 1240, 1220, 1200, 1180, 1160, 1090, 1080, 1050, 1040, 990, 980, 925, 910, 885, 810, 780, 760, 740, 710 cm^{-1};

(f) has a characteristic ultraviolet absorption spectrum as shown in the following, $\lambda_{max}^{H_2O}$ or 0.1NHCl = end absorption; $\lambda_{max}^{0.1N}$ NaOH = 230 nm (Shoulder) ($E_{1cm}^{1\%}$ = 325);

(g) has a characteristic thin layer chromatography pattern as shown in the following,

Stationary phase; Eastman Chromagram Sheet Cellulose No. 13254 (trade name, made by Eastman Kodak Co.)

Developing solvent	Rf value
75% Aqueous propanol	0.5
n-Butanol saturated with water	0
70% Aqueous acetonitrile	0.4

(h) is positive in color reaction with each of ferric chloride, potassium permanganate and iodine vapor, and is negative in color reaction by each of ninhydrin reaction and Molish's reaction; and

(i) is very soluble in water and methanol, and is sparingly soluble in acetone and propanol, and is insoluble in ethyl acetate, chloroform and benzene.

2. Antiobiotic FR-33289, i.e., 3-(N-acetyl-N-hydroxyamino)-2-hydroxypropylphosphonic acid and the pharmaceutically acceptable salt thereof, having the following characteristics:

(a) is effective in inhibiting the growth of various Gram-positive and Gram-negative bacteria; and as its monosodium salt,

(b) has a characteristic infrared absorption spectrum as shown in the following,
ν_{max}^{KBr} = 3300, 2900, 2400, 1740, 1620, 1420, 1240, 1140, 1040, 900 cm^{-1};

(c) has a characteristic nuclear magnetic resonance absorption spectrum as shown in the following, δ (ppm) in D_2O
1.88 (2H, d.d. J = 6 and 18Hz),
2.16 (3H, s),
3.66 - 3.9 (2H, m),
4.30 (1H, m)

(d) has a characteristic thin layer chromatography pattern as shown in the following,

Stationary phase; Eastman Chromagram Sheet Cellulose No. 13254 (trade name, made by Eastman Kodak Co.)

Developing solvent	Rf
60% Aqueous propanol	0.6; and

(e) is positive in color reaction with each of ferric chloride, potassium permanganate and iodine vapor.

9. An antimicrobial composition which comprises, as an effective ingredient, one or more compounds selected from the group consisting of antibiotics FR-900098 or the pharmaceutically acceptable salts thereof and FR-33289 or the pharmaceutically acceptable salts thereof and a non-toxic, pharmaceutically acceptable carrier.

4,143,136

METHOD OF CONTRACEPTION

Evert De Jage, and Jacob De Visser, both of Oss, Netherlands, assignors to Akzona Incorporated, Asheville, N.C.

Filed Nov. 17, 1977, Ser. No. 852,215

Claims priority, application Netherlands, Nov. 20, 1976, 7612955

Int. Cl.[2] **A61K** *31/56*

U.S. Cl. 424—240 **9 Claims**

1. A method of human female contraception comprising:

administering to a human female a contraceptively effective amount of at least one progestagenic compound at daily or shorter intervals for about three to about six days commencing from about the ninth to about the twelfth day after the onset of menstruation in said human female;

administering in a second stage thereafter to said human female a contraceptively effective amount of at least one progestagenic compound and a contraceptively effective amount of a peptide having LHRF activity at daily or shorter intervals for about one to about three days; and

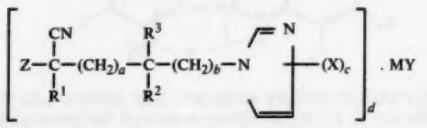
administering in a third stage thereafter to said human female a contraceptively effective amount of at least one progestagenic compound at daily or shorter intervals until a progestagenic compound has been administered for a total period of about seven to about fifteen days.

4,143,137
SUBSTITUTED ARYLCYANOALKYL AND DIARYLCYANOALKYLIMIDAZOLE METAL SALT COMPLEXES AND FUNGICIDAL COMPOSITIONS AND METHODS UTILIZING THEM

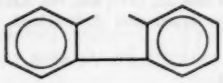
George A. Miller, Maple Glen; Hak-Foon Chan, Doylestown, and Harold E. Carley, Chalfont, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 647,039, Jan. 7, 1976, Pat. No. 4,073,921, which is a continuation-in-part of Ser. No. 557,546, Mar. 12, 1975, abandoned. This application Oct. 6, 1977, Ser. No. 839,877
Int. Cl.[2] A01N *9/22*; C07F *1/00, 3/00, 15/00*
U.S. Cl. 424—245 14 Claims

1. A metal salt complex of the formula:



wherein z is phenyl optionally substituted with up to three substituents selected from the group consisting of fluoro, chloro, bromo, iodo, nitro, cyano, methoxy, ethoxy, methyl, ethyl, propyl, butyl, trihalomethyl, phenyl and benzoyl; R^1 is hydrogen, (C_1–C_{20}) alkyl, (C_3–C_8) cycloalkyl, (C_5–C_8) cycloalkenyl, (C_3–C_6) alkenyl, (C_3–C_6) alkynyl, phenyl, benzyl or phenethyl or phenyl, benzyl or phenethyl substituted with up to three substituents independently selected from the group consisting of fluoro, chloro, bromo, iodo, nitro, cyano, methoxy, ethoxy, methyl, ethyl and trihalomethyl; R^2 and R^3 are independently hydrogen, (C_1–C_{20}) alkyl, phenyl, benzyl or phenethyl or phenyl, benzyl or phenethyl substituted with up to three substituents independently selected from the group consisting of fluoro, chloro, bromo, iodo, nitro, cyano, methoxy, ethoxy, methyl, ethyl and trihalomethyl or when taken together form (C_4–C_8) cycloalkyl; R^1 and Z when taken together form the group



a is 0 to 5; b is 0 to 5; X is halogen; c is zero to 2; M is a metal cation selected from Mg, Ca, Ba, Sn, Pb, Cu, Zn, Cd, Cr, Mn, Fe, Co and Ni; Y is an anion counterion selected from the group consisting of chloride, bromide, iodide, sulfate, bisulfate, phosphate, nitrate, perchlorate, carbonate, bicarbonate, hydrosulfide, hydroxide, acetate, oxalate, malate, citrate, tartarate, or alkylene dithiocarbamate and d is 1 to 4.

11. A method for controlling phytopathogenic fungi which comprises applying an effective amount of a metal salt complex according to claim 1 to a plant, to plant seeds or to the plant habitat.

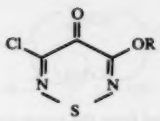
14. A fungicidal composition for controlling phytopathogenic fungi which comprises an agronomically acceptable carrier and, as the active ingredient, an effective amount of a metal salt complex of claim 1.

4,143,138
3-CHLORO-5-(OPTIONALLY SUBSTITUTED HETEROCYCLOXY)-4H-1,2,6-THIADIAZIN-4-ONE ANTIFUNGAL AGENTS

Clinton J. Peake; Wayne N. Harnish, both of Medina, and Bruce L. Davidson, Middleport, all of N.Y., assignors to FMC Corporation, Philadelphia, Pa.

Filed May 8, 1978, Ser. No. 904,094
Int. Cl.[2] C07D *285/16*; A01N *9/12*
U.S. Cl. 424—246 4 Claims

1. A compound of the formula



and hydrates thereof, wherein R is a six membered heterocyclic ring consisting of carbon and one or two atoms of nitrogen, one of which may be an N-oxide, optionally substituted with one to three substituents independently selected from lower alkyl, halogen, nitro, cyano, lower-alkylthio, lower alkylsulfinyl and lower alkylsulfonyl.

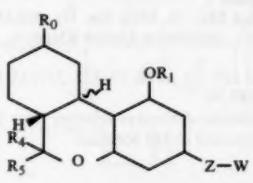
3. A method of controlling fungal damage to agricultural crops which comprises applying to the locus of infestation a fungistatic or fungicidal amount of the compound of claim 1.

4,143,139
9-HYDROXYDIBENZO[b,d]PYRANS AND INTERMEDIATES

Jasjit S. Bindra, Groton, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation of Ser. No. 730,672, Oct. 7, 1976, abandoned, which is a continuation-in-part of Ser. No. 628,210, Nov. 3, 1975, abandoned. This application Jul. 27, 1977, Ser. No. 819,471
Int. Cl.[2] A61K *31/35*; C07D *493/12*
U.S. Cl. 424—248.55 21 Claims

1. A compound having the formula



wherein R_1 is selected from the group consisting of hydrogen, alkanoyl having from one to five carbon atoms and —CO—$(CH_2)_p$—NR_2R_3 wherein p is 0 or an integer from 1 to 4; each of R_2 and R_3 when taken individually is selected from the group consisting of hydrogen and alkyl having from one to four carbon atoms; R_2 and R_3 when taken together with the nitrogen to which they are attached form a 5- or 6-membered heterocyclic ring selected from the group consisting of piperidino, pyrrolo, pyrrolidino, morpholino and N-alkylpiperazino having from one to four carbon atoms in the alkyl group;

each of R_4 and R_5 is selected from the group consisting of hydrogen, methyl and ethyl;

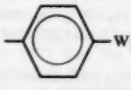
R_0 is selected from the group consisting of oxo and alkylenedioxy having from two to four carbon atoms;

Z is —$(alk_1)_m$—X—$(alk_2)_n$— wherein each of (alk_1) and (alk_2) has from 1 to 9 carbon atoms, with the proviso that the summation of carbon atoms in (alk_1) plus (alk_2) is not greater than 9;

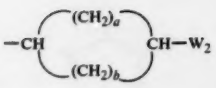
each of m and n is 0 or 1;

X is selected from the group consisting of O, S, SO and SO_2; and

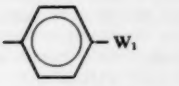
W is selected from the group consisting of methyl, pyridyl, piperidyl,



wherein W_1 is selected from the group consisting of hydrogen, fluoro and chloro; and



wherein W_2 is selected from the group consisting of hydrogen and



and a is an integer from 1 to 5 and b is 0 or an integer from 1 to 5; with the proviso that the sum of a and b is not greater than 5.

16. A process for producing an anti-hypertensive effectn in a mammal wh'ch comprises administering to the mammal an antihypertensive producing quantity of a compound of claim 1.

4,143,140

MORPHOLINE CARBOXAMIDES AND USE THEREOF

Brian G. Main, and Jeffrey J. Barlow, both of Macclesfield, England, assignors to Imperial Chemical Industries Limited, London, England

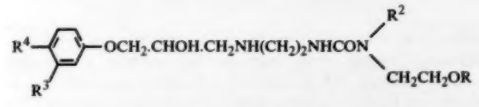
Filed May 22, 1978, Ser. No. 908,458

Claims priority, application United Kingdom, May 23, 1977, 21608/77

Int. Cl.[2] C07D *295/18;* **A61K** *31/535, 31/165;* **C07C** *127/19*

U.S. Cl. 424—248.54 **8 Claims**

1. An alkanolamine derivative selected from the group consisting of a compound of the formula:



wherein R^3 and R^4, which may be the same or different, each is hydrogen or hydroxy, provided that at least one of R^3 and R^4 is hydroxy, and wherein R and R^2 are joined together to form ethylene ($—CH_2CH_2—$); and non-toxic, pharmaceutically-acceptable acid-addition salts thereof.

5. A pharmaceutical composition comprising as active ingredient a cardio selective stimulating amount of at least one alkanolamine derivative or an acid-addition salt thereof, claimed in claim 1, in association with a pharmaceutically-acceptable diluent or carrier therefor.

4,143,141

METHOD OF TREATING ACNE WITH ANTIBIOTIC A201A

Paul W. Ensminger, Indianapolis, and Robert L. Hamill, Greenwood, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Sep. 14, 1977, Ser. No. 833,127

Int. Cl.[2] A61K *31/52*

U.S. Cl. 424—253 **6 Claims**

1. A method for treating acne comprising topically administering to humans suffering from acne an effective amount of a composition comprising from about 0.1 to about 10 percent of antibiotic A-201A by weight.

4,143,142

NOVEL PYRIDO-IMIDAZO-INDOLES, COMPOSITIONS AND METHOD THEREWITH

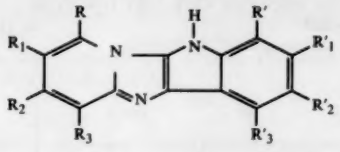
Parimal K. Adhikary, 510 Basswood Dr., Apt. No. 6, Nashville, Tenn. 37209

Division of Ser. No. 726,390, Sep. 24, 1976, abandoned. This application Nov. 4, 1977, Ser. No. 848,499

Int. Cl.[2] A61K *31/395;* **C07D** *487/04*

U.S. Cl. 424—256 **6 Claims**

1. A compound having the formula



I

and pharmaceutically acceptable acid addition salts thereof wherein R, R_1, R_2, R_3, are selected from the group consisting of hydrogen, halogen and lower-alkyl of from one to four carbon atoms, inclusive; with the proviso that taken together they constitute the following substituents on the tetracyclic ring, 10-halo, 8,10-dihalo, 8,9-di-lower-alkyl, and 7,9-di-lower alkyl; R', R'_1, R'_2, and R'_3 are selected from the group consisting of hydrogen, halogen and lower-alkyl of from one to four carbon atoms, inclusive, with the proviso that when taken together they constitute the following substituents on the tetracyclic ring, 1-halo, 2-halo, 3-halo, 4-halo, 1-lower-alkyl, 2-lower-alkyl, 3-lower-alkyl, 4-lower-alkyl, 1,3-dihalo, 2,3-dihalo, 2,4-dihalo, 3,4-dihalo, 1,3-di-lower-alkyl, 2,3-di-lower-alkyl, and 1,4-di-lower-alkyl.

4,143,143

SUBSTITUTED IMIDAZO[5,1-A]ISOQUINOLINES

Max-Peter Seiler, Basel, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

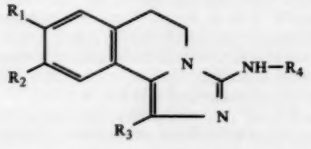
Filed Sep. 23, 1977, Ser. No. 835,986

Claims priority, application Switzerland, Sep. 29, 1976, 12302/76

Int. Cl.[2] C07D *471/14;* **A61K** *31/47*

U.S. Cl. 424—258 **14 Claims**

1. A compound of formula I,



wherein either R_1 is hydroxy or alkoxy of 1 to 4 carbon atoms, and

R_2 is hydrogen, hydroxy or alkoxy of 1 to 4 carbon atoms, or R_1 and R_2, together, are methylenedioxy,

R_3 is hydrogen or alkyl of 1 to 4 carbon atoms, and

R_4 is phenyl or phenyl substituted by 1, 2 or 3 substituents independently chosen from halogen, hydroxy, nitro or alkyl(C_{1-4}) haloalkyl(C_{1-4}) or alkoxy(C_{1-4}),

in free base form or in pharmaceutically acceptable acid addition salt form.

3. A method of treating arrhythmic disorders in animals which comprises administering a therapeutically effective amount of a compound of claim 1 to an animal in need of such treatment.

4. The compound of claim 1 which is 5,6-dihydro-8,9-dimethoxy-1-methyl-3-(2,6-dimethylphenylamino)imidazo [5,1-a]isoquinoline.

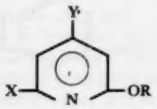
4,143,144

ETHERS OF 4-HALOMETHYLPYRIDINES

Helen K. Tobol, Concord, Calif., and Robert L. Noveroske, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

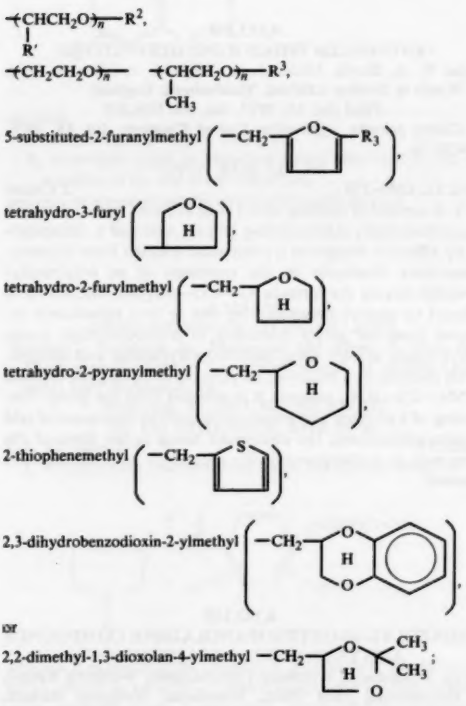
Filed Mar. 23, 1978, Ser. No. 889,303
Int. Cl.[2] C07D *213/64;* A01N *9/22*
U.S. Cl. 424—263 **38 Claims**

1. A compound corresponding to the formula:



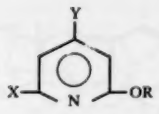
wherein Y represents trichloromethyl, dichloromethyl or dichlorofluoromethyl; X represents chloro, bromo, fluoro, alkoxy of 1 to 4 carbon atoms or OR; R represents:

$-(CH_2)_3OR^2$,



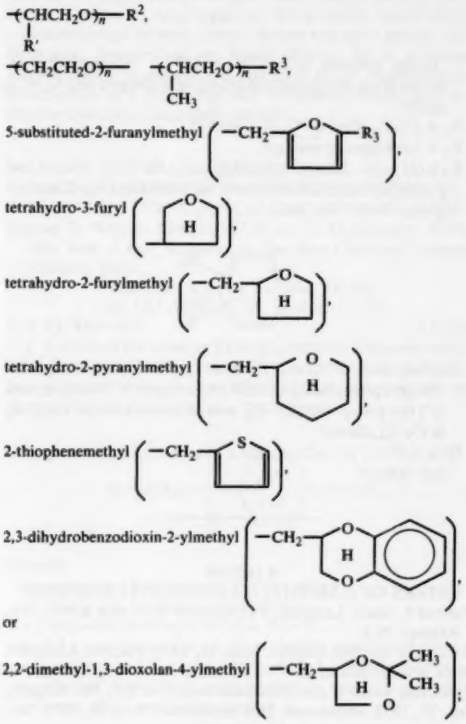
each R′ independently represents hydrogen or methyl; R^2 represents hydrogen, alkyl of 1 to 4 carbon atoms or phenyl; R^3 represents hydrogen or alkyl of 1 to 4 carbon atoms; and each n independently represents an integer of from 1 to 12.

23. A method for protecting plants from plant fungal disease organisms which attack the plant root system which comprises contacting plants, plant parts or their habitat with a non-phytotoxic, plant protecting amount of a plant protectant corresponding to the formula:



wherein Y represents trichloromethyl, dichloromethyl or dichlorofluoromethyl; X represents chloro, bromo, fluoro, alkoxy of 1 to 4 carbon atoms or OR; R represents:

$-(CH_2)_3OR^2$,



each R′ independently represents hydrogen or methyl; R^2 represents hydrogen, alkyl of 1 to 4 carbon atoms or phenyl; R^3 represents hydrogen or alkyl of 1 to 4 carbon atoms; and each n independently represents an integer of from 1 to 12, in intimate admixture with an inert adjuvant therefor.

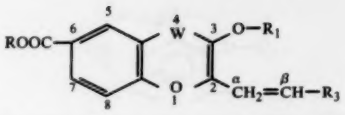
4,143,145

SUBSTITUTED 2-VINYL-CHROMONES AND PROCESS FOR THEIR PREPARATION

Gianfederica Doria, Milan; Ciriaco Romeo, Serino; Francesco Lauria, and Maria L. Corno, both of Milan, all of Italy, assignors to Carlo Erba S.p.A., Milan, Italy

Division of Ser. No. 803,947, Jun. 6, 1977. This application Sep. 8, 1977, Ser. No. 831,467
Claims priority, application Italy, Jan. 12, 1977, 19193 A/77
Int. Cl.[2] C07D *405/06;* C07D *409/06;* C07D *311/22*
U.S. Cl. 424—263 **5 Claims**

1. A compound of formula



wherein

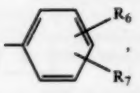
R is hydrogen or C_1–C_{12} alkyl, unsubstituted or substituted by a C_2–C_5 alkanoyloxy or by a

group, wherein each of R_4 and R_5 is independently selected from the group consisting of hydrogen and C_1–C_{10} alkyl;

R_1 is C_2–C_4 alkyl or C_3–C_4 alkenyl;

R_2 is hydrogen or methyl;

R_3 is (a) furyl, thienyl or pyridyl, being the furyl, thienyl and pyridyl groups unsubstituted or substitued by a methyl group; or (b) the group



wherein each of R_6 and R_7 is independently selected from the group consisting of (a$0) hydrogen; (b') halogen; and (c') the group $—(O)_n{}^1—R_8$, wherein n_1 is zero or 1 and R_8 is C_3–C_4 alkenyl

W is >C=O or >C=S, and a pharmaceutically acceptable salt thereof.

4,143,146

ESTERS OF α-METHYL-3,4-OR-PHENYLALANINES

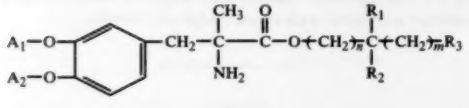
Walfred S. Saari, Lansdale, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 668,021, Mar. 18, 1976, Pat. No. 4,058,530, which is a division of Ser. No. 482,102, Jun. 25, 1974, Pat. No. 3,983,138, which is a continuation-in-part of Ser. No. 400,609, Sep. 25, 1973, abandoned. This application Nov. 14, 1977, Ser. No. 851,552

Int. Cl.² C07D *213/56;* A01N *31/455*

U.S. Cl. 424—266 **18 Claims**

1. A compound of the formula:



wherein:

n is 0, 1, 2, or 3,

m is 0, 1, 2, or 3;

A_1 and A_2 are individually H or a lower alkanoyl group,

R_1 and R_2 are individually H or alkyl of 1 to 3 carbon atoms and

R_3 is nicotinamido; or a pharmaceutically acceptable salt thereof.

9. A pharmaceutical composition for treating hypertension comprising an inert pharmaceutically acceptable diluent and an effective amount of a compound of claim 1.

4,143,147

ISOTHIAZOLE CARBOXAMIDES OF M-AMINOTETRAMISOLE AS ANTHELMINTICS

Michael R. G. Leeming, Canterbury, and John K. Stubbs, Deal, both of England, assignors to Pfizer Inc., New York, N.Y.

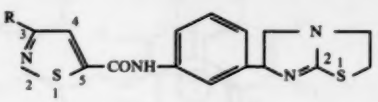
Filed Sep. 20, 1977, Ser. No. 834,893

Claims priority, application United Kingdom, Oct. 22, 1976, 44061/76

Int. Cl.² C07D *513/04;* A61K *31/425*

U.S. Cl. 424—270 **7 Claims**

1. The dl- and l-forms of the compounds of the formula:



and the pharmaceutically acceptable acid addition salts thereof, wherein R is hydrogen or methyl.

7. A veterinary composition comprising an anthelmintic concentration of a compound as claimed in claim 1 in an animal feed.

4,143,148

ANTI-ULCER THIAZOLINE DERIVATIVES

John T. A. Boyle, Maidenhead, England, assignor to John Wyeth & Brother Limited, Maidenhead, England

Filed Jul. 11, 1977, Ser. No. 814,365

Claims priority, application United Kingdom, Jul. 15, 1976, 29420/76

Int. Cl.² A61K *31/425*

U.S. Cl. 424—270 **2 Claims**

1. A method of treating ulcers in an afflicted mammal, which comprises orally administering to said mammal a therapeutically effective amount of a compound selected from hydroxythiazolines obtainable by the treatment of an aroylmethyl bromide having the formula Ar—CO—CH_2Br, wherein Ar is phenyl or phenyl substituted by one or two substituents selected from the group consisting of trifluoromethyl, lower alkyl, lower alkoxy, nitro, di(lower alkyl)amino and halogen, with thiourea or a N-(lower alkyl)thiourea having the formula RNH—CS—NH_2, wherein R is selected from the group consisting of hydrogen and lower alkyl, and the tautomers of said hydroxythiazolines, the compound being in the form of the free base or a pharmaceutically acceptable acid addition salt thereof.

4,143,149

INDAZOLYL-(4)-OXYPROPANOLAMINE COMPOUNDS AND THERAPEUTIC COMPOSITIONS

Fritz Wiedemann, Weinheim-Lützelsachsen; Wolfgang Kampe, Heddesheim; Max Thiel, Mannheim; Wolfgang Bartsch, Viernheim, and Egon Roesch, Mannheim, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Fed. Rep. of Germany

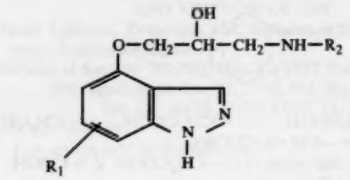
Filed Apr. 25, 1977, Ser. No. 790,648

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1976, 2619164

Int. Cl.² A61K *31/415;* C07D *231/56*

U.S. Cl. 424—273 P **16 Claims**

1. Indazolyl-(4)-oxy-propanolamine compound of the formula:



(I)

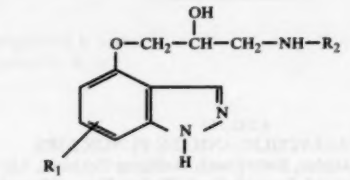
wherein

R_1 is hydrogen or lower alkyl and

R_2 is straight-chain or branched one lower alkyl which is optionally substituted by lower alkylthio;

and the pharmacologically compatible salts thereof.

12. Method of combatting or preventing a recurrence of cardiac and circulatory infirmities which method comprises administering to a subject an effective adrenergic β-receptor blocking amount of an indazolyl-(4)-oxypropanolamine compound of the formula



(I)

wherein

R_1 is hydrogen or lower alkyl; and

R_2 is straight-chain or branched lower alkyl which can be substituted by one lower alkylthio;

and the pharmacologically compatible salts thereof.

4,143,150

DERIVATIVES OF OXANILIC ACID

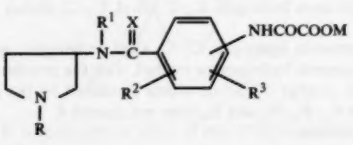
William J. Welstead, Jr., Richmond, and Albert D. Cale, Jr., Mechanicsville, both of Va., assignors to A. H. Robins Company, Inc., Richmond, Va.

Filed Aug. 19, 1977, Ser. No. 826,032

Int. Cl.[2] **C07D** *207/14;* **A61K** *31/40*

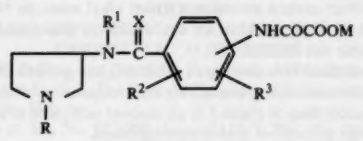
U.S. Cl. 424—274 **9 Claims**

1. A compound selected from those having the formula:



wherein R is lower-alkyl, cycloalkyl, phenylalkyl, alkylphenylalkyl, phenyl or substituted phenyl having one to three substituents selected from lower-alkyl, lower-alkoxy, trifluoromethyl, bromo, chloro, fluoro and nitro groups, R^1 is hydrogen, lower-alkyl, phenyl or substituted phenyl having one to three substituents selected from lower-alkyl, lower-alkoxy, trifluoromethyl, bromo, chloro, fluoro and nitro groups, R^2 is hydrogen, lower-alkyl, or lower alkoxy, R^3 is hydrogen, fluoro, chloro or bromo, X is oxygen or sulfur, and M is hydrogen, lower-alkyl or a physiologically acceptable cation.

4. A composition useful for its anti-allergy effect comprising an effective amount of about one to 100 milligrams of (a) a compound of the formula:



wherein R is lower-alkyl, cycloalkyl, phenylalkyl, alkylphenylalkyl, phenyl or substituted phenyl having one to three substituents selected from lower-alkyl, lower-alkoxy, trifluoromethyl, bromo, chloro, fluoro and nitro groups, R^1 is hydrogen, lower-alkyl, phenyl or substituted phenyl having one to three substituents selected from lower-alkyl, lower-alkoxy, trifluoromethyl, bromo, chloro, fluoro and nitro groups, R^2 is hydrogen, lower-alkyl, or lower alkoxy, R^3 is hydrogen, fluoro, chloro or bromo, X is oxygen or sulfur, M is hydrogen, lower-alkyl, or a physiologically acceptable cation, and (b) a pharmaceutically acceptable carrier.

4,143,151

METHOD FOR TREATING HYPERGLYCEMIA IN MAMMALS USING ARYLAMINO BENZOIC ACIDS

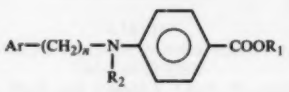
Eugene R. Wagner, Carmel, and Roger D. McDermott, Noblesville, both of Ind., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jul. 3, 1978, Ser. No. 922,002

Int. Cl.[2] **A61K** *31/38, 31/245, 31/195*

U.S. Cl. 424—275 **6 Claims**

1. A method for treating hyperglycemia in a mammal which comprises administering internally to said mammal an effective hypoglycemic amount of a compound or pharmaceutically-acceptable salt thereof having the formula



wherein

R_1 represents hydrogen or a lower alkyl;

R_2 represents hydrogen or methyl;

n represents an integer of from 0 to 3;

and Ar represents phenyl, thienyl, halo substituted thienyl, or substituted phenyl wherein the substituted moieties are selected from the group consisting essentially of halo, lower alkyl, and trihalomethyl.

4,143,152

ANTI-MICROBIAL (2-NITRO-3-PHENYL BENZOFURANYL)-PHENYLALKANOIC ACIDS AND DERIVATIVES

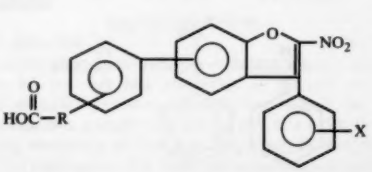
Walton J. Hammar, and Mark A. Rustad, both of St. Paul, Minn., assignors to Riker Laboratories, Inc., Northridge, Calif.

Filed Dec. 19, 1977, Ser. No. 862,013

Int. Cl.[2] **A61K** *31/345;* **C07D** *307/82*

U.S. Cl. 424—285 **14 Claims**

1. A compound of the formula



wherein R is straight or branched chain alkylene of one to four

carbon atoms and X is hydrogen, halogen or alkyl or alkoxy of one to three carbon atoms, or a lower alkyl ester, an N-unsubstituted or alkyl amide or an acyl halide or pharmaceutically acceptable salt thereof.

9. A method for arresting or inhibiting the growth of microorganisms comprising contacting microorganisms with a compound according to claim 1 in an amount sufficient to arrest or inhibit the growth of said microorganisms.

4,143,153

FUNGICIDE FOR WOOD PRESERVATION EMPLOYING COMPLEXED HEAVY METAL SALTS OF N-NITROSO-N-CYCLOHEXYLHYDROXYLAMINE

Ernst-Heinrich Pommer, Limburgerhof; Wolfgang Reuther, Ziegelhausen; Paul Raff, Ludwigshafen, and Reimer Goettsche, Baden-Baden, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Feb. 21, 1975, Ser. No. 551,907

Claims priority, application Fed. Rep. of Germany, Mar. 6, 1974, 2410603

Int. Cl.[2] A01N *9/00*

U.S. Cl. 424—289 **10 Claims**

1. A fungicidal composition for wood preservation consisting essentially of the water-soluble complex compound of a heavy metal salt of N-nitroso-N-cyclohexylhydroxylamine, said heavy metal being selected from the group consisting of copper, zinc, cadmium, nickel and cobalt, and a complexing agent selected from the group consisting of ammonia and organic or inorganic compounds having at least one amine group capable of entering into a complex with said heavy metal to convert said heavy metal salt into a water-soluble complex salt.

4,143,154

ANTI-MICROBIAL 2-NITRO-3-PHENYL BENZOFURANS SUBSTITUTED BY CARBOXY CONTAINING GROUP

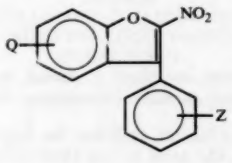
Robert A. Scherrer, White Bear Lake; Walton J. Hammar, St. Paul, and Richard M. Stern, Cottage Grove, all of Minn., assignors to Riker Laboratories, Inc., Northridge, Calif.

Filed Dec. 19, 1977, Ser. No. 861,891

Int. Cl.[2] A61K *31/345;* **C07D** *307/82*

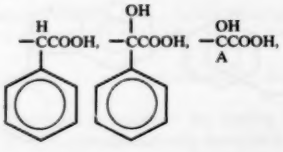
U.S. Cl. 424—285 **7 Claims**

1. A compound of the formula



wherein

Q is $-CH_2COOH$,



$-CH_2OCH_2COOH$,

$-CH_2SCH_2COOH$, $-OCH_2COOH$, $-CH_2CH(COOR)_2$ or $-CH{=}C(COOR)_2$,

Z is H except that when Q is $-CH_2COOH$, Z is COOH,

A is H, CH_3 or C_2H_5 and

R is H or lower alkyl and pharmaceutically acceptable salts thereof.

5. A method for arresting or inhibiting the growth of miroorganisms comprising contacting microorganisms with a compound according to claim 1 in an amount sufficient to arrest or inhibit the growth of said microorganisms.

4,143,155

SULFONYLGLYCOLIC ANILIDE FUNGICIDES

Adolf Hubele, Magden, Switzerland; Wolfgang Eckhardt, Lörrach, Fed. Rep. of Germany, and Walter Kunz, Oberwil, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

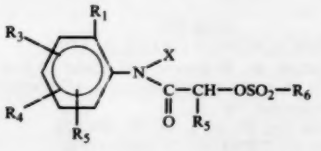
Filed Sep. 12, 1977, Ser. No. 832,752

Claims priority, application Switzerland, Sep. 17, 1976, 11816/76; Aug. 4, 1977, 9580/77

Int. Cl.[2] A61K *31/255, 31/335;* **C07C** *143/68;* **C07D** *307/32*

U.S. Cl. 424—303 **24 Claims**

1. A compound of the formula I



(I)

wherein

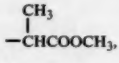
R_1 represents C_1–C_4 alkyl, C_1–C_4 alkoxy or halogen,

R_2 represents hydrogen, C_1–C_3 alkyl, C_1–C_4 alkoxy or halogen,

R_3 represents hydrogen, C_1–C_3 alkyl or halogen, and

R_4 represents hydrogen or methyl, with the proviso that the total number of carbon atoms contained by the substituents R_1, R_2, R_3 and R_4 does not exceed 8,

X represents



R_5 represents hydrogen or methyl and

R_6 represents C_1–C_6 alkyl which is unsubstituted or substituted by halogen or represents C_2–C_4 alkenyl or C_3–C_6 cycloalkyl or the group $-N(R_7)R_8$, in which R_7 represents hydrogen or C_1–C_4 alkyl and R_8 represents C_1–C_6 alkyl which is unsubstituted or substituted by halogen.

17. A method of combatting phytopathogenic fungi which comprises applying thereto or to the locus thereof an effective amount of a compound according to claim 1.

4,143,156

ANALGETIC ESTER COMPOUNDS, COMPOSITIONS AND METHOD OF USE

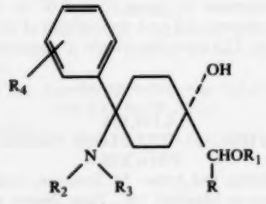
Daniel Lednicer, Evansville, Ind., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 797,782, May 17, 1977, Pat. No. 4,115,589. This application Apr. 27, 1978, Ser. No. 900,673

Int. Cl.[2] A61K *31/22*; C07C *93/24*

U.S. Cl. 424—311 5 Claims

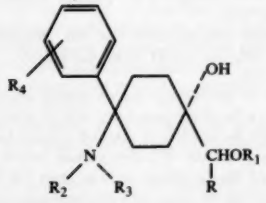
1. A compound of the formula



wherein R is hydrogen or alkyl of one to three carbon atoms, inclusive, R_1 is

wherein R_5 is alkyl of one to six carbon atoms, inclusive; R_2 and R_3 are the same or different and are alkyl of one to five carbon atoms, inclusive; and R_4 is hydrogen, meta or para halo, hydroxy or alkyl of one to three carbon atoms, inclusive, and physiologically acceptable acid addition salts thereof.

5. A method for inducing analgesia in mammals in need of such treatment which comprises administering to said mammal an analgetically effective amount of a compound of the formula



wherein R is hydrogen or alkyl of one to three carbon atoms, inclusive, R_1 is

wherein R_5 is alkyl of one to six carbon atoms, inclusive; R_2 and R_3 are the same or different and are alkyl of one to five carbon atoms, inclusive; and R_4 is hydrogen, meta or para halo, hydroxy or alkyl of one to three carbon atoms, inclusive, and physiologically acceptable acid addition salts thereof.

4,143,157

MITICIDAL AND APHICIDAL METHOD UTILIZING 2-HIGHER ALKYL-3-HYDROXY-1'4-NAPHTHOQUINONE CARBOXYLIC ACID ESTERS

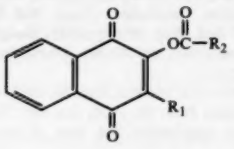
Russell F. Bellina, and Dennis L. Fost, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 827,598, Aug. 25, 1977, Pat. No. 4,107,325, which is a division of Ser. No. 722,513, Sep. 13, 1976, Pat. No. 4,053,634, which is a division of Ser. No. 613,553, Sep. 15, 1975, Pat. No. 4,055,661, which is a continuation-in-part of Ser. No. 531,483, Dec. 11, 1974, abandoned, which is a continuation-in-part of Ser. No. 494,294, Aug. 2, 1974, abandoned, which is a continuation-in-part of Ser. No. 468,692, May 10, 1974, abandoned. This application May 9, 1978, Ser. No. 904,258

Int. Cl.[2] A01N *9/24*

U.S. Cl. 424—314 8 Claims

1. A method for protecting plants from mites or aphids comprising applying to the plant locus to be protected a miticidally or aphicidally effective amount of a compound of the formula:



wherein

R_1 is alkyl or 8–14 carbon atoms which are branched, cyclic, or straight chain and

R_2 is alkenyl of 2–17 carbon atoms.

4,143,158

INHIBITION OF PROLACTIN RELEASE BY AN OPIATE ANTAGONIST

Eric L. Lien, Paoli, and Donald E. Clark, Norristown, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Mar. 24, 1978, Ser. No. 889,774

Int. Cl.[2] A61K *31/135*

U.S. Cl. 424—330 2 Claims

1. A method for inhibiting prolactin release in a warm-blooded animal requiring inhibition of prolactin release which comprises administering to said animal an effective amount of the compound (1)-α-dimethylamino-α-(cis-2-benzoyloxycyclohexyl)-m-cresol, or a non-toxic pharmaceutically acceptable acid addition salt thereof.

4,143,159

SKIN-CARE AGENTS CONTAINING HYDROXYALKYL CARBOXAMIDES AND PROCESS

Hinrich Möller, Düsseldorf-Benrath, and Rainer Osberghaus, Düsseldorf-urdenbach, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen, Fed. Rep. of Germany

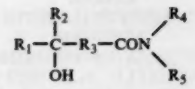
Filed Jul. 8, 1977, Ser. No. 814,049

Claims priority, application Fed. Rep. of Germany, Jul. 12, 1976, 2631284

Int. Cl.[2] A61K *7/48*

U.S. Cl. 424—358 24 Claims

1. A process for maintaining or restoring hygroscopicity in the skin for the care and protection of the skin of warm-blooded animals comprising topically applying to the skin a safe but effective amount as a moisturizer of a cosmetic agent consisting essentially of from 1 to 20 percent by weight, relative to the total agent, of at least one hydroxyalkyl carboxylic acid amide of the formula



wherein R_1 and R_2 are independently of each other a member selected from the group consisting of hydrogen and an alkyl radical having 1 to 4 carbon atoms, R_3 is a member selected from the group consisting of the direct bond and a straight-chain alkylene radical having 1 to 3 carbon atoms which is optionally substituted by one or more groups selected from the group consisting of alkyl having 1 to 4 carbon atoms and hydroxyalkyl having 1 to 4 carbon atoms, and R_4 and R_5 independently of one another are a member selected from the group consisting of hydrogen, an alkyl radical having 1 to 4 carbon atoms and an hydroxyalkyl radical having 2 to 6carbon atoms and 1 to 5 hydroxy groups, and the remainder conventional cosmetic excipients.

4,143,160

PROCESS FOR MOISTURING THE SKIN

Rainer Osberghaus, Dusseldorf-Urdenbach; Peter Lorenz, Langenfeld; Christian Gloxhuber, Haan, and Siegfried Braig, Hilden, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Dusseldorf, Fed. Rep. of Germany

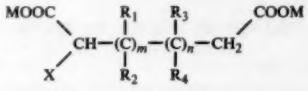
Continuation of Ser. No. 544,811, Jan. 28, 1975, abandoned. This application Nov. 19, 1976, Ser. No. 743,473

Claims priority, application Fed. Rep. of Germany, Jan. 29, 1974, 2404071

Int. Cl.[2] A61K *47/00*

U.S. Cl. 424—365 **7 Claims**

1. A process for the care and protection of the skin of warm-blooded animals comprising topically applying to the skin a safe but effective amount as a moisturizing agent of a cosmetic moisturizing composition consisting essentially of an emulsion adjusted to a pH between 5 and 7 containing an emulsifier, from 1% to 20% by weight based upon the total weight of at least one aliphatic polycarboxylic acid compound of the formula



wherein

M is selected from the group consisting of hydrogen, alkali metal, alkaline earth metal, ammonium, loweralkylammonium and loweralkylolammonium,

X is selected from the group consisting of hydrogen, —COOM and $—SO_3M$ in which M has the above-defined meanings,

R_1, R_2, R_3 and R_4 are each selected from the group consisting of hydrogen and — COOM in which M has the above-defined meanings, and

m and *n* are each the integer 0, 1 or 2; and

the remainder inert cosmetic excipients, said emulsion being selected from the group consisting of an oil-in-water emulsion and a water-in-oil emulsion.

4,143,161

METHOD FOR COATING BAIT

Stephen B. Ciulla, 21 MacKenzie La., Wakefield, Mass. 01880

Filed Jun. 12, 1978, Ser. No. 914,335

Int. Cl.[2] A01K *1/00*

U.S. Cl. 426—1 **4 Claims**

1. A method of coating bait to facilitate handling thereof by applying a powdered wood flour to the bait to enhance the gripping of the bait.

4,143,162

ENCAPSULATED FOODSTUFF

Yoshiho Tanaka, 40 Banchi, Mitono-cho, Gifu-shi, Gifu-ken, Japan

Filed Sep. 14, 1976, Ser. No. 723,299

Claims priority, application Japan, Sep. 13, 1975, 50-110485

Int. Cl.[2] A23L *1/221*

U.S. Cl. 426—89 **6 Claims**

1. An encapsulated foodstuff containing (a) a powdered freeze-dried water-extract of Chlorella algae, (b) at least one of garlic oil, powdered extract of garlic, powdered water extract of ginseng, and powdered water extract of aloe and (c) at least one vegetable oil, the encapsulating means being a water soluble digestible capsule into which is placed the foodstuff, the weight of component (a) being from 0.67 to 3.5 times the amount of component (b) and the weight of component (c) being from 3.3 to 23.5 times the weight of component (b) in the food-stuff.

4,143,163

COATED FIBROUS CELLULOSE PRODUCT AND PROCESS

Bruce R. Hutchison, and Arthur M. Swanson, both of Madison, Wis., assignors to Maxfibe, Inc., Palm Desert, Calif.

Continuation-in-part of Ser. No. 701,147, Jun. 30, 1976, abandoned. This application Feb. 25, 1977, Ser. No. 772,101

Int. Cl.[2] A23L *1/04*

U.S. Cl. 426—96 **30 Claims**

1. A low calorie edible fibrous cellulose product for human consumption, consisting essentially of:

(a) particulate fibrous cellulose having an average particle length of less than about 75 microns, and

(b) a soluble coating of soluble edible gum and polyhydric alcohol adhered to the surfaces of the particulate fibrous cellulose to provide a soluble, smooth, and palatable surface texture to the product, the amount of edible gum being between about 2% and 15% of the fibrous cellulose, the proportion of polyhydric alcohol to edible gum being between about 2 to 1 and 12 to 1, the coated fibrous cellulose being dispersible in water to form a stable, gel-like suspension of uniform viscosity.

4,143,164

BACON ANALOG AND PROCESS

Sudhakar P. Shanbhag, Yorktown Heights; Shun Ku; Jackie R. Epps, both of Peekskill, and Herbert T. Kempkes, Pleasantville, all of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Dec. 30, 1976, Ser. No. 755,537

Int. Cl.[2] A23D *5/00*; A23J *3/00*

U.S. Cl. 426—104 **8 Claims**

5. A process for preparing a bacon analog which comprises:

(1) preparing a fat phase precursor which when cooked will simulate the fat portion of cooked natural bacon, by

(a) blending at least 1% dry gelatin based on the total weight of the fat phase with at least 3% based on the weight of the fat phase of a dry heat-coagulable protein, selected from the group consisting of egg albumen, blood albumin, and combinations of these,

(b) mixing the dry ingredients with water to form an aqueous matrix former, and

(c) mixing the aquous matrix former with from 30 to 60% fat having a melting point below 40° C. based on the weight of the phase to disperse the fat throughout the aqueous matrix former;

(2) preparing a lean phase precursor which when cooked texturally resembles the lean region of cooked natural bacon by

(a) mixing water with from 6% to 15% based on the weight of the phase of heat coagulable protein to form an aqueous lean phase mixture,

(b) mixing the aqueous lean phase mixture with from 10%

to 25% of a liquid blend of palm oil and partially hydrogenated soybean oil, the palm and soybean oils being present at a ratio within the range from 1:3 to 3:1, to form a loose oil-in-water lean phase dispersion,

(c) deaerating the lean phase dispersion to a density of at least 1.08 grams per cubic centimeter;

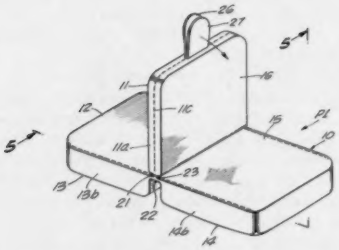
(3) applying at least one layer of the fat phase precursor and at least one layer of the lean phase precursor to a surface to form a layered mass; and

(4) subjecting the layered mass to a temperature and for a time effective to coagulate the protein in the precursors and form a unitary cohesive mass.

4,143,165
FOLDABLE PACKAGE FOR MEAT SANDWICH

Alexander C. Daswick, 647 Orange Grove, South Pasadena, Calif. 91030

Filed Jan. 21, 1977, Ser. No. 761,287
Int. Cl.² B65B 25/22
U.S. Cl. 426—113 **4 Claims**



1. A packaged hamburger sandwich adapted to be transported, stored, cooked and served in its original package, comprising:

a flexible metal foil container forming three generally rectangular compartments, one for meat and two for bread;

each of said compartments having opposed flat side walls, ends and sides;

a meat patty in said meat compartment;

two pieces of bread in corresponding bread compartments;

said three compartments having a common end forming a common hinge means such that they may be folded together into a transport or storage position with the flat side walls of said meat compartment being engaged by corresponding ones of said bread compartments, or alternatively they may be opened up into a cooking position such that the full rectangular area of both flat side walls of said meat compartment may be concurrently engaged by heat applying means;

said hinge means being so constructed as to permit cooking gases to flow internally therethrough between the compartments;

at least one of said bread compartments having a vent opening formed in an exterior wall thereof, and having a manually removable cover enclosing said vent opening;

whereby when said cover is removed and said compartments are opened up, and heat is then applied to the flat side walls of said meat compartment, cooking gases will flow from said meat compartment through said hinge means and past the associated piece of bread before escaping from said vent opening; and

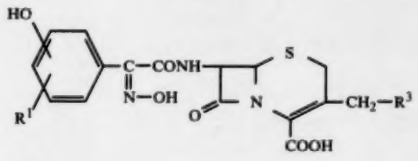
said container having a weakened tear line extending along the end of said meat compartment opposite said common end and also extending substantially continuously along both of said sides of said meat compartment and both of said sides of both of said bread compartments, such that after cooking is completed the flat side walls of said meat compartment may be pulled away from corresponding sides of the meat patty and at the same time the bread compartment walls may be pulled away from the pieces of bread which may then be folded towards the meat patty to form the sandwich.

4,143,166
7[(2-HYDROXYAMINO-2-DISUBSTITUTED PHENYL-ACETAMIDO)-]3-HETEROCYCLICTHIO-3-CEPHEM-4-CARBOXYLIC ACIDS

Takao Takaya, Sakai; Takashi Masugi, Toyonaka; Hisashi Takasugi, Osaka, and Hiromu Kochi, Sakai, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Feb. 3, 1976, Ser. No. 654,804
Claims priority, application Japan, Feb. 4, 1975, 50/15191; Mar. 27, 1975, 50/37647; Apr. 21, 1975, 50/48833; Jun. 23, 1975, 50/78294; Jul. 7, 1975, 50/83867
Int. Cl.² A61K 31/545; C07D 501/36
U.S. Cl. 424—246 **37 Claims**

1. Syn isomers of 7-(α,α-disubstituted-acetamido)-3-cephem-4-carboxylic acid of the formula:



wherein

R^1 is hydrogen, halogen, hydroxy, nitro, (C_1 to C_6) alkoxy or (C_1 to C_6)alkanesulfonamido; and

R^3 is thiadiazolylthio, thiadiazolylthio monosubstituted with (C_1 to C_6)alkyl, tetrazolylthio or tetrazolylthio monosubstituted with a (C_1 to C_6)-alkyl; and

(C_1 to C_6)alkanoyloxy-(C_1 to C_6)alkyl esters thereof; and pharmaceutically acceptable salts thereof.

37. A pharmaceutical antibacterial composition comprising a compound of composition comprising a compound of claim 1 in association with a pharmaceutically acceptable, substantially non-toxic carrier or excipient.

4,143,167
PROCESS FOR TREATMENT OF MUSHROOMS

Maurice Blanchaud, and Edgar Bournier, both of Chace, France (19580)

Continuation-in-part of Ser. No. 608,272, Aug. 27, 1975, abandoned, which is a continuation of Ser. No. 394,275, Sep. 4, 1973, abandoned. This application Dec. 14, 1976, Ser. No. 750,451
Claims priority, application France, Sep. 4, 1972, 72 31308
Int. Cl.² A23B 1/00
U.S. Cl. 426—262 **22 Claims**

1. The process for treating mushrooms having natural juices and interstices filled with air or other gases comprising the steps of

placing the mushrooms within a container and subjecting the mushrooms to a vacuum sufficient to remove at least a part of the air or other gases from the interstices;

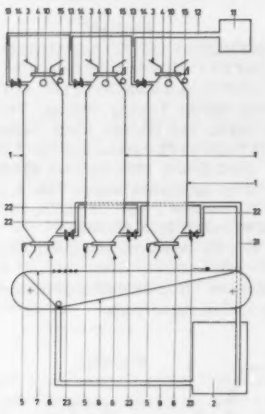
relieving the vacuum and introducing a mushroom broth treatment liquid containing an edible colloidal substance of the type adapted to coagulate under heat selected from the group comprising egg white, casein, milk albumin and carrageenan into the container to contact the mushrooms with the treatment liquid;

filling the interstice portions of the mushrooms with an effective amount of the treatment liquid to retain the natural juices, the said filled treatment liquid containing some of the edible colloidal substance;

removing the remainder of the treatment liquid from the container; and

coagulating an effective amount of the edible colloidal sub-

stance contained in the filled treatment liquid within the interstice portions to obstruct the filled interstice portions,



whereby natural aromas, color and appearance of the mushrooms are retained.

4,143,168

SHAPED BLOOD BY-PRODUCT AND PROCESS

John W. Bernotavicz, Hanover Park, Ill., assignor to The Quaker Oats Company, Chicago, Ill.

Continuation of Ser. No. 638,685, Dec. 8, 1975, abandoned. This application Mar. 15, 1977, Ser. No. 777,585

Int. Cl.[2] A23K *1/04*

U.S. Cl. 426—266 **19 Claims**

1. A solidified blood chunk suitable for use in a canned pet food consisting essentially of blood and gum wherein the blood is at least one selected from the group consisting of fresh blood, frozen blood, citrated blood, and nitrated blood and the gum is present in an amount sufficient to form a solid blood chunk stable under moist pet food canning conditions and is from 0.1 to 3 percent of at least one gum based on the weight of the blood, wherein the blood comprises the balance of the chunk.

4,143,169

DRY MINK FEED

Leroy V. Skoch, and Raymond F. Seweil, both of St. Louis, Mo., assignors to Ralston Purina Company, St. Louis, Mo.

Filed May 26, 1977, Ser. No. 800,982

Int. Cl.[2] A23K *1/00*

U.S. Cl. 426—307 **11 Claims**

1. A method of forming an extruded high fat food product for mink having excellent particle integrity containing about 24% fat consisting essentially of the steps of forming a mixture consisting essentially of a combination of farinaceous and proteinaceous ingredients said farinaceous and proteinaceous ingredients together having a fat content of about 3% to 5% and about 3% to 6% added fat by weight of said mixture,

plasticizing the mixture in an environment of elevated temperature and pressure,

extruding the mixture from said environment of elevated temperature and pressure to an environment of lower temperature and pressure through a restricted orifice thereby forming said mixture into an expanded porous structure,

drying said expanded porous product to a stable moisture content of about 5% to 9% by weight and

coating said expanded porous product with about 10 to about 16% fat by weight:

4,143,170

METHOD OF MAKING A NON-FOAMING LOW-CALORIE SWEETENING COMPOSITION

Thomas P. Finucane, Hartsdale; Ernest L. Earle, Jr., New City, and Alan H. Dworetzky, Tarrytown, all of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Continuation of Ser. No. 535,471, Dec. 23, 1974, abandoned. This application Jun. 21, 1976, Ser. No. 699,011

Int. Cl.[2] A23L *1/22*

U.S. Cl. 426—329 **11 Claims**

1. An improved method for producing a readily dispersible, non-foaming, low-calorie bulked sweetener composition comprising a co-dried edible bulking agent, and a low-calorie sweetening composition which contains an effective amount of a defoaming agent so as to retard foaming and a sweetening agent selected from the group consisting of saccharin, cyclamates, and L-aspartic acid derivatives, and combinations thereof, comprising the steps of

(a) forming a first sweetening solution of a minor amount of an edible bulking agent, and an amount of defoaming agent greater than or equal to the effective amount to retard foam basis the total bulk sweetening composition, and a sweetener selected from the group consisting of saccharin, cyclamates, and L-aspartic acid derivatives and combinations thereof;

(b) spray drying the first sweetener solution;

(c) forming a second sweetening solution containing a major amount of the edible bulking agent, and a quantity of defoaming agent from 0 to less than effective amount to retard foaming and a sweetener selected from the group consisting of saccharin, cyclamates, and L-aspartic acid derivatives and combinations thereof;

(d) spray drying the second sweetening solution;

(e) blending the spray dried first and second dried sweetening solutions to derive a total bulked sweetening composition containing an effective amount of defoaming agent to retard foaming and having minimal change in density and flowability compared to bulked sweetening compositions wherein all defoaming agents, sweetening agents, and bulking agents are dried together.

4,143,171

GELATINIZED ANIMAL FOOD PRODUCT

Keith Buckley, Melton Mowbray, and David Barker, Barrow-on-Soar, both of England, assignors to Mars Limited, London, England

Continuation of Ser. No. 566,415, Apr. 9, 1975, abandoned. This application Aug. 22, 1977, Ser. No. 826,827

Claims priority, application United Kingdom, Apr. 11, 1974, 16237/74

Int. Cl.[2] A23L *1/04, 1/31*

U.S. Cl. 426—331 **9 Claims**

1. A solid, bacterially stabilized food product having elastic chewing properties and being fluidizable with heat and setting to a gelatinous solid upon cooling, said product comprising: edible solids containing sub-divided edible protein material which constitutes at least 10% by weight of said product; 0–25% fat; 0–3% antimycotic; 5–40% humectant; and a matrix bonding said edible material together consisting of a thermoreversible gelatable gum gelating agent prepared from a polysaccharide containing monosaccharide units other than glucose residues, said gelling agent constituting 0.2–5% of said product and being selected from the group consisting of xanthan and carob gums, carrageenan, furcellaran, agar-agar, pectin having a degree of methoxyl esterification of less than 40% and mixtures thereof; said food product having a pH between about 3.5 and 4.5 and a bacteriostatic water activity of from about 0.75 to about 0.95, and containing from about 30% to 70% by weight moisture, the total concentration of said one or more humectants plus said moisture being greater than about 40% by weight.

4,143,172

FOOD BINDING AGENT

John R. Mitchell, East Leake; Keith Buckley, Mowbray, and Ian E. Burrows, Gaddesby, all of England, assignors to Mars Limited, London, England

Filed Oct. 3, 1975, Ser. No. 619,179

Claims priority, application United Kingdom, Oct. 8, 1974, 43500/74

The portion of the term of this patent subsequent to Sep. 21, 1993, has been disclaimed.

Int. Cl.[2] A23G *9/00;* A23L *1/04, 1/31;* A23C *23/00*

U.S. Cl. 426—532 8 Claims

4. A solid coherent food product comprising pieces or particles of solid foodstuff supplying a protein content of 5 to 30% animal or vegetable protein by weight of said product, 0.1 to 10% by weight crude pectinaceous material having a pectin content de-esterified to a degree of esterification below 20%, a suitable calcium salt up to about 5% to effect bonding, 0 to 5% sequestrant, and from 50 to 95% moisture said product being acidic having a low pH of 2.5 or above and said pectinaceous material in combination with the available calcium in said product and at least part of said moisture forming a heat resistant gel embedding or bonding together said pieces or particles of foodstuff.

4,143,173

FLAVORING WITH 5-ACYL-2-(FURFURYLTHIO)DIHYDRO-2,5-DIALKYL-3-[2H]FURANONES

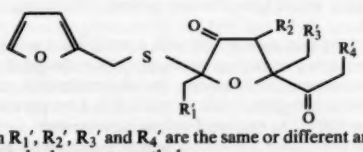
Braja D. Mookherjee, Holmdel; Donald A. Withycombe, Lincroft; Ira Katz, West Long Branch, all of N.J.; Alfred E. Goossens, New York, N.Y.; Manfred H. Vock, Locust; William J. Evers, Middletown, both of N.J.; Joaquin F. Vinals, Red Bank, N.J., and Jacob Kiwala, Brooklyn, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 819,957, Jul. 28, 1977, Pat. No. 4,092,334. This application Mar. 17, 1978, Ser. No. 887,632

Int. Cl.[2] A23L *1/234*

U.S. Cl. 426—535 6 Claims

1. A process for augmenting or enhancing the aroma or taste of a foodstuff comprising adding to said foodstuff from about 0.01 parts per million up to about 100 parts per million based on the total weight of said foodstuff of one or more substantially pure, synthetically produced 5-acyl-2-(furfurylthio)dihydro-2,5-dialkyl-3-(2H)furanone having the structure:



wherein R_1', R_2', R_3' and R_4' are the same or different and each represents hydrogen or methyl.

4,143,174

FOOD COMPOSITION CONTAINING WHEY COLLOIDAL PRECIPITATE

Syed M. M. Shah, and Anthony J. Luksas, both of Chicago, Ill., assignors to Beatrice Foods Co., Chicago, Ill.

Filed Jul. 24, 1975, Ser. No. 598,873

Int. Cl.[2] A23C *21/00;* A23D *5/00;* A23L *1/04, 2/00*

U.S. Cl. 426—570 26 Claims

1. A food composition comprising a food and from 0.01% to 25% of a modifier consisting essentially of a non-proteinaceous colloidal precipitate of whey, and water, said whey colloidal precipitate being the product of a process having at least one step (a) raising the pH of whey to at least 5.8, and (b) heating the whey to a temperature of at least 80° C. for a time sufficient to produce said precipitate, and the precipitate of said process being identifiable as a complex precipitate which in aqueous suspension has an average particle size of less than 10 microns, is essentially white in color, exhibits no disagreeable taste in aqueous suspensions of up to about 30%, can be dried to a free-flowing powder, is capable of gelling water and petroleum ether, said whey being priorly sufficiently de-proteinated so that 5% by weight of trichloroacetic acid therein will not yield more than 5% by weight of precipitate protein.

4,143,175

CHEESE FOOD PRODUCT

Richard H. Whelan, Medfield, and Frank R. Conant, Lexington, both of Mass., assignors to CPC International Inc., Englewood Cliffs, N.J.

Filed Jun. 9, 1977, Ser. No. 804,952

Int. Cl.[2] A23C *19/12*

U.S. Cl. 426—582 6 Claims

1. An acid stable cheese containing gel consisting of an aqueous dispersion of natural cheese consisting of from about 55 to about 45% mozzarella cheese selected from the group consisting of whole milk mozzarella, low moisture whole milk mozzarella, part skim mozzarella and low moisture part skim mozzarella and combinations thereof, from about 0 to about 15% provolone cheese, and from about 15% to about 0% romano cheese, and an acidulant selected from the group consisting of food grade organic acids and food grade mineral acids in an amount sufficient to lower the pH of the cheese containing gel to from about 4.1 to about 4.4, from about 1.5 to about 0.8% locust bean gum and from about 0.8 to about 1.5% xanthan gum such that the moisture content of the cheese containing gel is in a range sufficient to prevent the emulsion from breaking while permitting the emulsion to be shredded at about −2.2° C.

4,143,176

PEANUT SKIN-OIL EMULSION

Arthur E. Krisinski, Menlo Park, and Wilbur A. Parker, Bridgewater, both of N.J., assignors to CPC International Inc., Englewood Cliffs, N.J.

Filed Jun. 8, 1977, Ser. No. 804,823

Int. Cl.[2] A23D *5/00;* A23L *1/20*

U.S. Cl. 426—601 8 Claims

1. A process for obtaining a peanut skin-oil emulsion free of bitter off-flavors useful for adjusting peanut butter color and flavor comprising

grinding peanut skins until 100% of said ground skins are capable of passing through at least a 100 mesh screen;

mixing said ground skins with a food grade oil at a weight ratio of ground skins to oil in the range of about 1:1 to about 1:3; and,

blending said ground skins-oil mixture until a uniform, homogeneous blend is obtained.

4,143,177

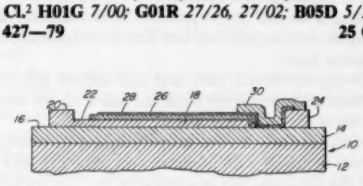
ABSOLUTE HUMIDITY SENSORS AND METHODS OF MANUFACTURING HUMIDITY SENSORS

Michael G. Kovac, Sudbury; David J. Chleck, Brookline, and Philip Goodman, Lexington, all of Mass., assignors to Panametrics, Inc., Waltham, Mass.

Filed Jan. 31, 1977, Ser. No. 764,394

Int. Cl.[2] H01G *7/00;* G01R *27/26, 27/02;* B05D *5/12*

U.S. Cl. 427—79 25 Claims



1. The method of manufacturing a humidity sensor comprising the steps of

(a) providing a substrate having a microscopically smooth surface,
(b) building up a uniform layer of Al on at least a portion of said substrate surface, said layer having a first surface in contact with said substrate surface and a second exposed surface,
(c) forming an oxide over at least a major portion of the area of said Al layer to provide a porous Al_2O_3 layer over said Al layer,
(d) building up an electrically conductive layer, which is substantially permeable to water vapor, over at least a major portion of the Al_2O_3 layer, and
(e) building up an electrically conductive strip in contact with said permeable electrically conductive layer and extending beyond a border of the Al_2O_3 layer, without electrical contact with the underlying Al, to an electrical contact location on said substrate.

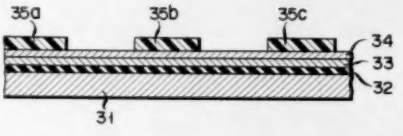
23. The method of manufacturing a humidity sensor comprising the steps of
(a) providing a substrate having a microscopically smooth surface,
(b) building up a uniform layer of Al on at least a portion of said substrate surface, said layer having a first surface in contact with said substrate surface and a second exposed surface,
(c) forming an oxide of substantially the entirety of said Al layer to provide a porous Al_2O_3 layer,
(d) building up an electrically conductive layer, which is substantially permeable to water vapor, over at least a major portion of the exposed surface of said Al_2O_3 layer, and
(e) providing means for establishing electrical contact with said first surface of said Al_2O_3 layer.

4,143,178

MANUFACTURING METHOD OF SEMICONDUCTOR DEVICES

Nozomu Harada, and Nobuhisa Kubota, both of Yokohama, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Jul. 7, 1977, Ser. No. 813,464
Claims priority, application Japan, Jul. 7, 1976, 51-79821
Int. Cl.[2] H01L *21/225;* B05D *5/12*
U.S. Cl. 427—85 **5 Claims**



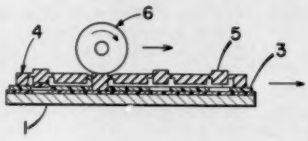
1. A manufacturing method of semiconductor devices having polycrystalline semiconductor layer doped with impurity, comprising the steps of:
forming a first polycrystalline semiconductor layer doped with impurity on a substrate;
forming a second polycrystalline semiconductor layer undoped with impurity on said first polycrystalline semiconductor layer;
removing selectively said first and second polycrystalline semiconductor layers from the substrate to expose portions of the substrate; and
thermal-oxidizing the second polycrystalline semiconductor layer undoped with impurity and some exposed portions of the substrate, the impurities in the first polycrystalline semiconductor layer being diffused into the second polycrystalline semiconductor layer during the thermal-oxidizing step.

4,143,179

METHOD OF MANUFACTURING A KEYBOARD

Masumi Nishikata, and Kiyoshi Tsugawa, both of Tokyo, Japan, assignors to Fuji Polymer Industries, Co., Ltd., Tokyo, Japan

Filed Dec. 16, 1974, Ser. No. 533,097
Int. Cl.[2] B05D *5/12*
U.S. Cl. 427—58 **4 Claims**



1. A method of manufacturing a keyboard which is useful in keying structures wherein a resilient preformed insulating rubber keyboard is coated with electrically conductive paint at specific locations on the keyboard, to form a conductive contact, the method consisting of
spreading a thin layer of electrically conductive paint on a flat fixed plate;
surmounting the electrically conductive paint with a masking shield;
surmounting the masking shield with said preformed insulating rubber keyboard;
contacting the preformed insulating rubber keyboard with pressure means,
whereupon those portions of the preformed rubber keyboard which are not masked are forced downwardly into intimate contact with the electrically conductive paint causing the paint to adhere to the peformed ruber keyboard, thereafter releasing the pressure means, and
allowing the electrically conductive paint to dry.

4,143,180

ARTICLE MARKING METHOD

Paul L. White, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Aug. 4, 1975, Ser. No. 601,751
Int. Cl.[2] B44F *1/10;* G03C *11/22*
U.S. Cl. 427—145 **3 Claims**

1. A glass article identification method which comprises the steps of:
a. marking said glass article with a transparent, non-particulate coating consisting essentially of a colloidal dispersion of aluminum monohydrate, in a desired indicia pattern;
b. heating said glass article so marked to a temperature of at least 300° C to cure said indicia pattern; and
c. contacting said transparent indicia pattern with a suitable substantially opaque development material having a greater affinity for said coating forming said indicia pattern than for said glass article to thereby render said indicia pattern visible.

4,143,181

PROCESS FOR THE PREPARATION OF A COATING FOR GLASS OR CERAMIC SURFACES

André Cahn, Paris; Jacques Sanson, Senlis; Henri Vanspeybroeck, Villiers St Sepulcre; Robert Dumas, Chalon-sur-Saone, and Michel Mossé, Bures-sur-Yvettes, all of France, assignors to Societe Francaise Duco, Stains and Societe Generale pour l'Emballage, Paris, both of, France

Filed Jul. 18, 1977, Ser. No. 816,644
Claims priority, application France, Aug. 3, 1976, 76 23680; Jul. 1, 1977, 77 20311
Int. Cl.[2] B05D *3/02*
U.S. Cl. 427—195 **13 Claims**

1. Process for producing a coating on a glass or ceramic

surface, comprising applying a first layer of a coating composition consisting of a hydroxylated material selected from the group consisting of hydroxylated polyesters, polycaprolactone-polyols and hydroxylated polyester-diisocyanate adducts, and of a cross-linking agent; thermally cross-linking said first layer; and applying a surface layer of a coating composition consisting of a film-forming material selected from the group consisting of hydroxylated polyesters, epoxy resins, modified epoxy resins and acrylic resins, and of a cross-linking agent; and thermally cross-linking the resulting surface layer.

4,143,182

POROUS BODIES

John W. Henney, Abingdon, and Ronald S. Wilks, Newbury, both of England, assignors to United Kingdom Atomic Energy Authority, London, England

Continuation of Ser. No. 609,105, Sep. 23, 1976, abandoned. This application Jun. 13, 1977, Ser. No. 806,062

Claims priority, application United Kingdom, Sep. 10, 1974, 39510/74

Int. Cl.[2] B05D *3/02*

U.S. Cl. 427—226 **4 Claims**

1. A method of providing a porous silicon nitride body with a filler for reducing the gas-permeability thereof which comprises the steps of

i. impregnating the body with a mixture consisting essentially of MgO and Al_2O_3, wherein the ratio of MgO to Al_2O_3 is equimolecular;

ii. oxidising the impregnated body to produce SiO_2 by oxidation of the silicon nitride, wherein the oxidation is stopped when the molecular ratio of SiO_2 to MgO is 5 to 2; and

iii. firing in a non-oxidising atmosphere at a temperature of 1400° C. or above to produce cordierite and silicon oxynitride thereby to partly or wholly fill the open pores of the body with a mixture consisting essentially of said cordierite and silicon oxynitride.

3. A method of providing a porous silicon nitride body with a filler for reducing the gas-permeability thereof which comprises the steps of

i. immersing the body in an aqueous solution of a magnesium compound which is decomposable to MgO, drying and decomposing the compound to MgO, immersing the body in an aqueous solution of an aluminum compound which is decomposable to Al_2O_3, drying and decomposing the compound to Al_2O_3, the ratio of the concentrations of said solutions being equimolecular with respect to one another and said decompositions providing said body with a mixture consisting essentially of MgO and Al_2O_3 wherein the mole ratio of MgO to Al_2O_3 is equimolecular.

ii. oxidising the impregnated body to produce SiO_2 by oxidation of the silicon nitride, wherein the oxidation is stopped when the molecular ratio of SiO_2 to MgO is 5 to 2; and

iii. firing in a non-oxidising atmosphere at a temperature of 1400° C. or above to produce cordierite and silicon oxynitride thereby to partly or wholly fill the open pores of the body with a mixture consisting essentially of said cordierite and silicon oxynitride.

4,143,183

METHOD OF DECORATING GLASSWARE

Thomas F. Rupp, Sylvania, and Lowell J. Wells, Toledo, both of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Jun. 27, 1977, Ser. No. 809,951

Int. Cl.[2] B05D *5/00*; B41F *17/08*; B05C *17/04*; G03C *7/00*

U.S. Cl. 427—266 **6 Claims**

1. The method of color decorating an axially concentric glass article including the steps of;

(a) selecting a colored design or decoration,

(b) separating the colored design into component continuous tone prints, each representing a primary color,

(c) creating halftone positives from the continuous tone prints for each primary color,

(d) transferring the image of each halftone positive to an emulsion coated mesh screen with the angle of the halftone dot lines all lying within the range of 32 to 70 degrees with respect to the filament direction of the mesh screen,

(e) depositing a first coat of low contrast color through its halftone screen onto the surface of the glass,

(f) applying the remaining dominant primary colors one at a time through their respective halftone screens to the surface of the glass while maintaining close registration with said first deposited coat,

(g) firing the decorated article to adhere the decorative material to the surface of the glass.

4,143,184

PRODUCTION OF GALVANIZED STEEL STRIP

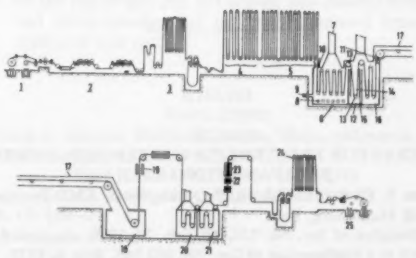
Philippe Paulus, and Marios Economopoulos, both of Liege, Belgium, assignors to Centre de Recherche Metallurgiques-Centrum voor Research in de Metallurgie

Filed Mar. 30, 1977, Ser. No. 782,953

Claims priority, application Belgium, Apr. 1, 1976, 840316; Apr. 2, 1976, 840373

Int. Cl.[2] C23C *1/02*

U.S. Cl. 427—300 **20 Claims**



1. In a method of continuously galvanizing thin steel strip, comprising the following successive steps:

(a) preheating the strip to a temperature suitable for imparting desired mechanical properties to the strip,

(b) adjusting the temperature of the strip, under a protective atmosphere, to a level suitable for its immersion in molten zinc,

(c) immersing the temperature-adjusted strip from step (b) into a bath of molten zinc,

(d) draining the molten zinc from the strip, and

(e) cooling the resulting strip, the improvement which consists of:

selecting the preheating temperature in the range of from 400° to 950° C in step (a), and performing the temperature adjustment step of step (b) in the following manner:

(1) quenching the strip in an aqueous bath maintained substantially at its boiling temperature and removing the strip from the bath, in order to form on the strip a continuous oxide layer less than 2 g/m^2 thick,

(2) eliminating the oxide layer formed on at least a part of the surface of the strip, and

(3) selecting the said suitable level in the range of from 420° to 550° C and maintaining this temperature.

4,143,185

FABRICATION OF COATINGS FROM THERMOPLASTIC IONOMERS

Robert D. Lundberg, Somerville, and Henry S. Makowski, Scotch Plains, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 705,466, Jul. 15, 1976, abandoned, which is a division of Ser. No. 610,826, Sep. 5, 1975, abandoned, which is a division of Ser. No. 429,162, Dec. 28, 1973, Pat. No. 3,925,280, which is a division of Ser. No. 229,487, Feb. 25, 1972, abandoned. This application Aug. 26, 1977, Ser. No. 828,102

Int. Cl.[2] B05D *3/02*

U.S. Cl. 427—314 5 Claims

1. A process for fabricating an article from a thermoplastic composition, said thermoplastic composition being a thermoplastic ionomer, said polymer having a backbone composed of a thermoplastic resin and having polar groups at a level of 0.2 to 15 mole % based on the monomer repeat units in said backbone of said thermoplastic polymer, said polar groups being pendant to said backbone, which comprises the steps of:

(a) suspending said thermoplastic composition having an average particle size of from about 0.1 to about 200 microns in a liquid medium in such amount that solids content of the resulting suspension is in the range of from about 15 to about 75 wt. %; said liquid medium being nonvolatile and being capable of plasticizing the backbone near or above the softening point of that backbone;

(b) applying said suspension to a surface by a means selected from the group consisting of dip casting, slush casting, rotational casting, spraying, or spreading; and

(c) heating said surface to a temperature at least approximately equal to that of the softening point of said backbone;

wherein steps (b) and (c) may be transposed.

4,143,186

PROCESS FOR ELECTROLESS COPPER DEPOSITION FROM AN ACIDIC BATH

Thomas F. Davis, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 724,668, Sep. 20, 1976, abandoned, which is a continuation of Ser. No. 602,345, Aug. 6, 1975, abandoned. This application Jul. 13, 1977, Ser. No. 815,409

Int. Cl.[2] C23C *3/02*

U.S. Cl. 427—345 11 Claims

1. A method for electroless deposition of copper on a substrate of a high temperature polymer said deposition being from a bath in which copper has been dissolved, said substrate being pretreated to receive the deposited copper said method including the steps comprising of:

contacting said substrate with an aqueous electroless bath having a pH in the range from 4.0 to 7.5 and having a soluble copper salt therein and a) as a reducing for said bath, dimethylamine borane; b) as a complexing agent for said copper, a pyrophosphate, an orthophosphate, ethylene diamine tetraacetic acid, nitrilotriacetic acid, an ethylene diamine, or triethylene tetraamine or mixtures of said amines;

maintaining the pH of the solution in the range from 4.0 to 7.5, if needed, by adjustment with the addition of ammonium hydroxide, sodium hydroxide, or potassium hydroxide; and

maintaining, while depositing said copper on said substrate, the temperatures of the bath from 70° to 160° F.

4,143,187

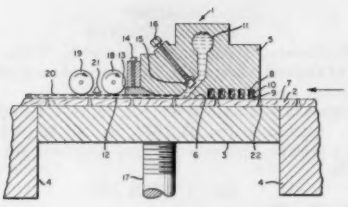
PROCESS FOR COATING SHEET SUBSTRATES WITH THERMOPLASTIC POLYMER

James F. Pilgrim, Elginburg, and Ronald A. Hunter, Kingston, both of Canada, assignors to Du Pont of Canada Limited, Montreal, Canada

Filed Dec. 1, 1977, Ser. No. 856,506

Int. Cl.[2] B05D *3/12*

U.S. Cl. 427—358 14 Claims



1. In a process for coating a substantially inflexible sheet substrate with a coating of thermoplastic polymer in which molten thermoplastic polymer is extruded between first and second die lips of an extrusion coating die and onto a face of said sheet substrate, said extrusion die being formed, in part, of a metal block having means to feed molten polymer therethrough to said die lips, the improvement comprising feeding the sheet substrate in face-to-face contact with said metal block over substantially the entire width of said sheet substrate, passing said sheet substrate from contact with the metal block into spaced apart relationship with the first die lip, said sheet substrate thereby forming the second die lip of the extrusion coating die, the first die lip extending substantially parallel to and in spaced apart relationship from the sheet substrate for a distance of at least 10 cm, said sheet substrate having a plurality of openings selected from the group consisting of orifices and slits in the surface thereof, extruding molten thermoplastic polymer into the space between the first die lip and the sheet substrate and thereby coating the sheet substrate with thermoplastic polymer.

4,143,188

USE OF AQUEOUS RESIN SOLUTIONS AS BINDERS AND IMPREGNATING AGENTS

Wernhard Huber-Nuesch, deceased, late of Basel, Switzerland (by Susy Huber-Nuesch, heir); by Fabienne Huber, heir, and by Ariane Huber, heir, both of Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jun. 30, 1977, Ser. No. 811,663

Claims priority, application Switzerland, Jun. 30, 1976, 8392/76

Int. Cl.[2] C08G *59/26;* C08K *3/34*

U.S. Cl. 427—386 22 Claims

1. A method of binding loose aggregates which comprises:

(1) applying to the loose aggregates an aqueous solution consisting of

(a) an epoxy resin which is completely water-soluble at room temperature and which contains one N-heterocyclic ring in the molecule,

(b) an amine compound which is soluble in water to the extent of at least 70 percent by weight, which contains at least three hydrogen atoms bound to nitrogen atoms of the amine compound and which satisfies the condition of formula I

$$a \cdot w/c) < 14 \qquad (I)$$

wherein a represents the H-active amine equivalent defined by the molecular weight divided by the total number of hydrogen atoms bound to nitrogen of the amine compound,

w represents the sum of the number of primary, secondary

and tertiary amino groups, hydroxyl groups and ether groups, with two ether groups counting as one group, and c represents the number of carbon atoms in the molecule or the water-soluble salt thereof; and

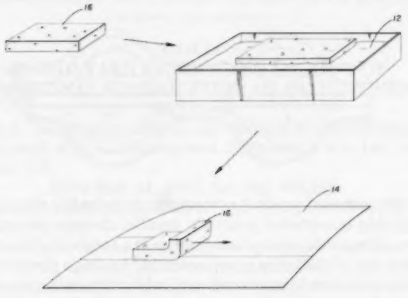
2) hardening the aqueous solution at room temperature.

4,143,189

METHOD FOR APPLYING A PHOTO POLYMER TO SURFACES

Jack L. Woods, and Craig P. Woods, both of 1517 Ninth St., Ogden, Utah 84404

Filed May 8, 1974, Ser. No. 468,038
Int. Cl.[2] B05D *3/02, 1/28;* **G03C** *5/00, 1/94*
U.S. Cl. 427—385 B **3 Claims**



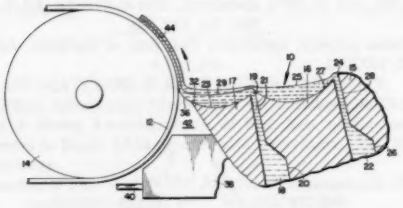
1. In a method of distributing a photo polymer over a surface, the steps of absorbing liquid photo polymer into a plastic sponge; allowing solvent in the photo polymer to chemically react with and at least partially soften at least the exterior of the sponge; and drawing at least a portion of the photo polymer impregnated sponge across the surface.

4,143,190

METHOD AND APPARATUS FOR COATING WEBS

Edward J. Choinski, Wayland, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 27, 1977, Ser. No. 763,059
Int. Cl.[2] B05D *1/30*
U.S. Cl. 427—420 **10 Claims**



1. The method for coating a moving web with a liquid composition comprising a plurality of liquid layers wherein layers within said composition are separate and distinct which comprises:

a. flowing said liquid composition by gravity along a plurality of inclined slides in an adjacent inclined sequence producing one continuous slide surface over which said composition flows from slide to slide, said slides each comprising an inclined concave surface and each having a slot for feeding one of said liquid layers onto said inclined concave surface and to form a pool of said liquid on said inclined concave surface that has a depth greater than the depth of the liquid entering and exiting from said concave surface, and

b. flowing said liquid composition across a gap between a slide immediately adjacent said moving web and said moving web to contact and coat said moving web.

4,143,191

SIMULATED BLOOMING FLOWER ARRANGEMENT

Yvonne Chavis, Camden, N.J., assignor to Douglas Jefferson, Camden, N.J.

Filed Mar. 28, 1977, Ser. No. 781,648
Int. Cl.[2] A01N *3/00*
U.S. Cl. 428—13 **4 Claims**

1. A simulated blooming flower arrangement comprising:

a flower pot including material therein capable of supporting a substantially rigid stem of a flower, said pot and material further being adapted to retain water therein;

a plurality of flowers having elongated rigid stems, said stems being held by said material within said pot so that the petals of said flowers are located above the top of said pot;

the petals of said flowers being adapted to close to give the appearance of a bud when in the presence of humidity and being adapted to open to give the appearance of a fully blossomed flower in the absence of humidity;

a substantially transparent imperforate cover member, and

means on said cover member cooperating with means on said pot to enable said cover member to temporarily rest on the top of said pot and around said flowers whereby said cover member can be readily removed from and applied to said pot.

4,143,192

TAPE STRIP

William L. Hayden, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Nov. 14, 1977, Ser. No. 851,315
Int. Cl.[2] B60R *13/00;* **B32B** *7/00;* **C09J** *7/02*
U.S. Cl. 428—31 **8 Claims**

1. A tape strip comprising:

an elongated strip portion having an outer face and an inner face, said elongated strip portion having a width not exceeding three-eighths of an inch;

an adhesive layer on said inner face of said elongated strip portion;

a pair of tape end portions, one portion being attached at each end of said elongated strip portion, said pair of tape end portions having an outer face and an inner face, said

tape end portion having a width dimension of at least one-half inch; and

an adhesive layer on said inner face of each of said tape end portions.

4,143,193

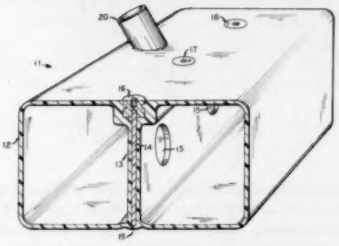
MOLDED CONTAINER

Robert L. Rees, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 8, 1976, Ser. No. 721,647

Int. Cl.[2] B32B *1/02, 27/00*

U.S. Cl. 428—35 **17 Claims**



1. A rotationally molded container comprising:

a substantially continuous outer wall means of a synthetic resin enclosing a space; and

an inner structure comprising at least one baffle extending across said space, engaging said wall at two locations, carried by support means molded into said wall at one of said two locations and engaging the inner portion of said wall at the other of said two locations;

said baffle being adapted to permit passage of a fluid within said container from one side of said baffle to the other.

4,143,194

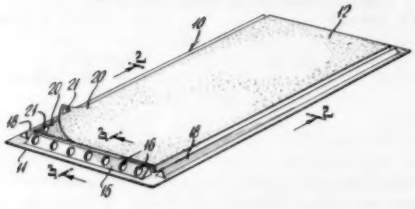
DISPOSABLE FLOOR MAT COMBINATION

Allen Wihksne, Fort Worth, Tex., assignor to Arbrook, Inc., Arlington, Tex.

Filed Mar. 1, 1977, Ser. No. 773,372

Int. Cl.[2] B32B *3/06*

U.S. Cl. 428—81 **13 Claims**



1. A disposable combination of support and mat for removing loose dirt from objects coming in touch with said mat comprising: a generally flat one piece flexible support having an upper surface with an area defined thereon to accommodate a mat, said upper surface having a pair of beveled surfaces integrally formed thereon, each beveled surface being astride opposed borders of said mat area and being inclined upwards towards said mat area, said support having means along at least one edge thereof for interlocking with means of a separate but similar combination of support and mat to provide a flat, linked mat assembly; and a mat secured to said mat area and extending proximate to said beveled surfaces, said mat having an upper surface with an adhesive layer thereon sufficient to retain loose particles of dirt coming in contact therewith.

4,143,195

METHOD OF MANUFACTURING A LAMINATED FIBRO-FILAMENTARY OR FILM STRUCTURE WHICH IS PARTLY DELAMINATED AND PRODUCTS PRODUCED BY SAID METHOD

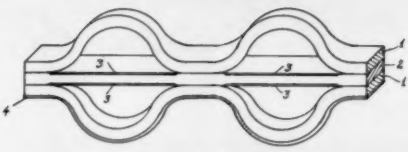
Ole-Bendt Rasmussen, 7, Topstykket, Birkerod, Denmark

Continuation of Ser. No. 612,227, Sep. 10, 1975, abandoned, which is a continuation of Ser. No. 398,826, Jan. 7, 1975, abandoned, which is a division of Ser. No. 164,745, Jul. 21, 1971, Pat. No. 3,788,922. This application Dec. 21, 1976, Ser. No. 752,886

Claims priority, application United Kingdom, Jul. 21, 1970, 35333/70

Int. Cl.[2] B32B *3/12*

U.S. Cl. 428—116 **10 Claims**



1. An extruded product comprising an assembly of a plurality of thin coextruded generally parallel discrete ribbon like strips arranged in superposed fashion in a sandwich-like stack, at least one of the strips in said assembly having a shrinkability different from at least one other of said strips, said strips each having flat opposite faces with the mutually facing faces of each adjacent pair of said plurality of strips being bonded together in contacting face to face relation over selected areas of such faces and substantially unbonded in the remaining areas of said faces, said selectively bonded and unbonded areas occurring at intervals along the length of said contacting faces in a predetermined pattern.

4,143,196

FIBRE FLEECE OF ELECTROSTATICALLY SPUN FIBRES AND METHODS OF MAKING SAME

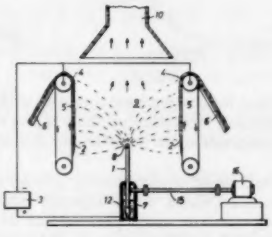
Walter Simm; Claus Gösling, both of Leverkusen; Richard Bonart, Regensburg, and Béla von Falkai, Gohr, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 416,316, Nov. 15, 1973, Pat. No. 4,069,026, which is a continuation-in-part of Ser. No. 155,189, Jun. 21, 1971, abandoned. This application Jul. 7, 1977, Ser. No. 813,720

Claims priority, application Fed. Rep. of Germany, Jun. 29, 1970, 2032072

Int. Cl.[2] B01D *35/06*

U.S. Cl. 428—212 **9 Claims**



1. An article comprising several layers of fiber fleeces each produced by electrostatically spraying a solution having a conductivity of $10^{-9}Ohm^{-1}cm^{-1}$ to $10^{-4}Ohm^{-1}cm^{-1}$ of a polymer in a volatile solvent between an electrode wetted by the solution and a conductive support for spraying of the solution, evaporation of the solvent, and collection of the

polymer as the fibre fleece on the support, the polymer being polycarbonate and the fibers of the fleece having a porous surface structure, said layers, respectively, having positive and negative charges.

5. Process of producing a fleece of polymeric fibres which comprises electrostatically spraying a solution having a conductivity of $^{-9}Ohm^{-1}cm^{-1}$ to $10^{-4}Ohm^{-1}cm^{-1}$ of a polymer in a volatile solvent between an electrode wetted by the solution and a conductive support for spraying of the solution, evaporation of the solvent, collection of the polymer as the fibre fleece on the support, the polymer being polycarbonate and the fibres of the fleece having a porous surface structure, impressing charges of opposite polarity on the electrode and the support and alternating the polarity to provide the fleece composed of layers with positive and negative charges.

4,143,197

ARAMID YARN FABRICS AND METHOD OF DIMENSIONAL STABILIZATION OF SAME BY HEAT SETTING

Albert J. Jasionowicz, Clifton, and Richard R. Saffadi, Ridgefield, both of N.J., assignors to J. P. Stevens & Co., Inc., New York, N.Y.

Filed May 11, 1977, Ser. No. 795,848

Int. Cl.[2] A41D *27/02*; B32B *27/02, 27/34*; D03D *15/00*

U.S. Cl. 428—225 **21 Claims**

1. An article of clothing comprising at least one layer of fabric having a single constituent aramid fiber yarn and a separate heat settable synthetic fiber yarn, said yarns being interrelated to form said one layer of fabric and said heat settable yarn being heat set to dimensionally stabilize said one layer of fabric without bonding said aramid fiber yarn to said heat settable yarn.

7. A dimensionally stabilized fabric comprising a first yarn interrelated to a second yarn to form said fabric, said first yarn being a single constituent aramid fiber yarn and said second yarn being a heat settable synthetic fiber yarn, said second yarn being heat set to dimensionally stabilize the fabric without bonding.

12. The fabric according to claim 7 wherein said yarns are knitted to form an open scrim.

13. A method for forming a dimensionally stabilized fabric having a single constituent aramid fiber yarn comprising interrelating aramid fiber yarns with a heat settable synthetic fiber yarn to form a desired fabric and heat treating said fabric at a temperature for a sufficient amount of time to heat set said heat settable yarn whereby said fabric is dimensionally stabilized without bonding.

4,143,198

BASE MATERIAL FOR ARTIFICIAL LEATHER

Gustav Sinn, Leverkusen; Martin Matner, Odenthal, and Hermann J. Bross, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 650,532, Jan. 19, 1976, abandoned. This application Aug. 5, 1977, Ser. No. 822,000

Claims priority, application Fed. Rep. of Germany, Jan. 23, 1975, 2502654

Int. Cl.[2] B32B *7/14*

U.S. Cl. 428—290 **3 Claims**

1. A process for producing a base material for artificial leather which comprises (1) impregnating a fiber fleece with an aqueous rubber latex mixture containing, for each 100 parts by weight of rubber, 0.5 to 5 parts by weight of a heat sensitizer, 3 to 10 parts by weight of a vulcanization agent, 1 to 4 parts by weight of a vulcanization accelerator selected from the group consisting of alkali metal, alkaline earth metal and ammonium salts of dimethyl, diethyl, diisopropyl and dibutyl dithiocarbamic acid and 0.5 to 10 parts by weight of an expanding agent which is either a silicone oil having a viscosity of from 50 to 1000 cP or an emulsifiable substance which is insoluble, both in the rubber and the other constituents of the latex, and is selected from the group consisting of long chain aliphatic and alicyclic isocyanates, condensation products of N-methylolated melamine, urea and cyclic ureas with long chain fatty acids, long chain fatty acid amides, long chain alcohols and long chain amines, polyvinyl methyl ethers having a molecular weight of from 30,000 to 70,000 and mixtures of low molelcular weight polyethylene with polyether siloxane, (2) coagulating the impregnated rubber latex at a temperature of from 25° to 80° C, (3) immediately vulcanizing the impregnated fiber fleece and (4) then drying the same.

3. The product of the process of claim 1.

4,143,199

TEXTILE ELEMENTS OF NODULAR APPEARANCE, PROCESSES FOR THEIR MANUFACTURE AND ARTICLES PRODUCED WITH SUCH ELEMENTS

Pierre Bardon, Ecully; Rene Guillermin, Bron, and Jean Joly, Craponne, all of France, assignors to Rhone-Poulenc-Textile, Paris, France

Filed Oct. 19, 1976, Ser. No. 733,857

Claims priority, application France, Oct. 20, 1975, 75 32243

Int. Cl.[2] D02G *3/00*

U.S. Cl. 428—369 **15 Claims**

1. An elongated decorative textile element of nodular appearance, comprising an assembly of substantially parallel polyamide or polyester yarns of high bulk, which possesses, over its length, at least two compressed zones of low diameter separated by a bulky zone of high diameter in which the ratio of the apparent diameters of the compressed zone and bulky zone is within the range of from 2 to 1 to about 50 to 1 said assembly having a total denier of at least about 100,000.

4,143,200

SYNTHETIC FILAMENTS AND FIBRES WITH HIGH MOISTURE ABSORPTION AND WATER RETENTION CAPACITY

Eduard Radlmann; Ulrich Reinehr, and Günther Nischk, all of Dormagen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 17, 1977, Ser. No. 769,724

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1976, 2607071

Int. Cl.[2] D02G *3/00*

U.S. Cl. 428—373 **6 Claims**

1. A dry-spun filament or fiber having a sheath-core structure with a microporous core, both sheath and core of said filament or fiber comprising a fiber-forming acrylonitrile copolymer having more than 50 mval of carboxyl and carboxyl salt groups per kilogram of copolymer at least 10% of which are carboxyl salt groups, and having a moisture absorption capacity of at least 7% (at 65% relative humidity and 21° C.) and a water retention capacity of at least 25%.

4,143,201

POLYSACCHARIDE BEADS

Yutaka Miyashiro, Nara; Masao Ogawa, Osaka; Yoshio Yamazaki, Toyonaka, and Seizi Igarasi, Ashiya, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Oct. 20, 1976, Ser. No. 734,352

Claims priority, application Japan, Oct. 21, 1975, 50-127196; May 24, 1976, 51-60438

Int. Cl.[2] B32B *9/02, 19/04*

U.S. Cl. 428—403 **11 Claims**

1. A carrier for immobilized enzyme, affinity chromatography, gel filtration and ion exchange comprising a water-insoluble β-1,3-glucan gel in the shape of beads having a diameter

within the range of about 5 to 1000μ, said beads being composed of water-insoluble β-1,3-glucan gel surrounding a core material selected from the group consisting of (1) beads of pumice ejected from volcanoes and the secondary deposit of such pumice, (2) pumice, (3) alumina, (4) silica, (5) glass bead and (6) hollow glass bead.

4,143,202

ASH COATED CELLULAR GLASS PELLET

Eugene Tseng, and Morton Bassin, both of Northridge, Calif., assignors to Maryland Environmental Service, Annapolis, Md.

Filed Sep. 23, 1976, Ser. No. 725,699

Int. Cl.[2] C03C *17/22;* C04B *31/44;* B32B *17/06*

U.S. Cl. 428—406 **10 Claims**

1. A foam glass pellet comprising:

(a) a core of cellular glass;

(b) a coating of fly ash substantially enclosing said cellular glass core and bonded thereto.

4,143,203

PARTICULATE SUPPORT MATERIAL

Peter N. Rigopulos, Boxford; Charles W. Desaulniers, Franklin, and David E. Doucette, Wakefield, all of Mass., assignors to Amicon Corporation, Lexington, Mass.

Filed Mar. 19, 1976, Ser. No. 668,425

Int. Cl.[2] B32B *5/16, 9/04*

U.S. Cl. 428—407 **4 Claims**

1. A particulate support material comprising particles having a mean diameter from 0.1 to 50 micrometers in which the range of particle sizes is within 20% of the mean diameter and the specific gravity of the particles is from 1.1 to 1.2, said particles having a core of water impermeable rigid polyacrylonitrile with a hydrophilic surface layer enclosing said core comprising hydrolyzed polyacrylonitrile having carboxyl or carboxylate groups in an amount from 0.2 to 0.5 milli-equivalent per dry gram of particles, said surface layer amounting to 0.01 to 20 percent by weight of said particles.

2. A particulate support material comprising particles having a mean diameter from 0.1 to 50 micrometers and having a core of water impermeable rigid polyacrylonitrile with a hydrophilic surface layer enclosing said core comprising hydrolyzed polyacrylonitrile having carboxyl or carboxylate groups in an amount of 0.001 to 0.8 milli-equivalent per dry gram of particles in which at least 10% of the total carboxyl and carboxylate groups are esterified to N-hydroxysuccinimide ester groups, said surface layer amounting to 0.01 to 20 percent by weight of said particles.

4,143,204

ARTICLES COATED WITH FLUOROCARBON RESINS

James C. Fang, Media, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 212,737, Dec. 27, 1971, abandoned, which is a division of Ser. No. 51,722, Jul. 1, 1970, Pat. No. 3,661,831, which is a continuation-in-part of Ser. No. 738,818, Jun. 21, 1968, abandoned, and a continuation-in-part of Ser. No. 738,820, Jun. 21, 1968, abandoned, which is a continuation-in-part of Ser. No. 654,333, Jul. 19, 1967, abandoned, which is a continuation-in-part of Ser. No. 528,047, Feb. 17, 1966, abandoned, which is a continuation-in-part of Ser. No. 413,333, Nov. 23, 1964, abandoned. This application Jan. 24, 1974, Ser. No. 436,731

Int. Cl.[2] B05D *3/02, 7/24;* B32B *5/14*

U.S. Cl. 428—413 **28 Claims**

1. An article bearing on a surface thereof a unilayered coating comprising a tetrafluoroethylene/hexafluoropropylene copolymer and at least one auxiliary film-forming material, the portion of the coating adjacent to said surface being predominantly composed of the auxiliary material(s) and the portion adjacent to the outer surface of the coating being predominantly composed of copolymer.

4,143,205

PHOSPHATIZED AND PAINTED METAL ARTICLES

Edward A. Rowe, Jr., Cheshire, Conn., and William H. Cawley, Painesville, Ohio, assignors to Diamond Shamrock Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 729,810, Oct. 5, 1976, abandoned, which is a continuation-in-part of Ser. No. 560,362, Mar. 20, 1975, abandoned. This application Dec. 27, 1977, Ser. No. 864,338

Int. Cl.[2] C23F *7/08, 7/10, 7/26;* B32B *15/18*

U.S. Cl. 428—469 **13 Claims**

1. A coated ferruginous substrate having on the surface thereof an adherent, corrosion-resistant and water-insoluble composite surface coating, which coating comprises a base coating on the substrate surface of a water-insoluble, complex phosphatized coating of the iron phosphate type obtained by contacting said ferruginous substrate with an organic solvent and water-containing liquid phosphatizing composition containing water in minor amount but in an amount exceeding phosphoric acid in said composition while being sufficient for said composition to provide a phosphatized coating of substantial water insolubility, said coating containing, in addition to trace elements, the elements iron, phosphorous, and oxygen plus carbon and nitrogen, and having a coating surface ratio of oxygen atoms to phosphorous atoms of at least about 4:1, and a coating surface ratio of carbon atoms to phosphorous atoms of greater than about 1.5:1, and on said base coating a paint topcoating from a paint topcoat composition.

4,143,206

METHOD OF FINISHING SYNTHETIC ORGANIC FIBROUS MATERIAL, IN PARTICULAR OF PROVIDING IT WITH AN ANTISTATIC FINISH

Horst Jäger, Bettingen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

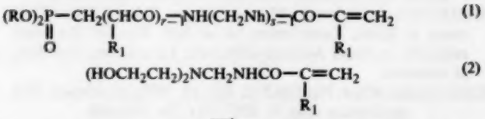
Division of Ser. No. 639,312, Dec. 10, 1975, Pat. No. 4,066,597. This application Sep. 16, 1977, Ser. No. 833,832

Claims priority, application Switzerland, Dec. 20, 1974, 17038/74; Dec. 20, 1974, 17037/74; Dec. 20, 1974, 17036/74

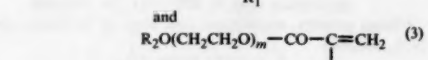
Int. Cl.[2] B05D *3/02;* B32B *27/06, 27/34, 27/00*

U.S. Cl. 428—474 **21 Claims**

1. A method of providing synthetic organic fibrous material with an antistatic and dirt repellent finish which comprises treating said material with an aqueous or organic solution or emulsion containing 1–30 percent by weight of a composition consisting essentially of a 75 to 100 percent by weight of a copolymer having a molecular weight between about 2,000 and 50,000 of at least two monomers in a ratio of about 1:10 to 10:1 and of the formulae

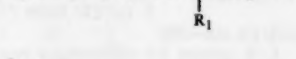


(1)



(2)

and



(3)

or mixtures of such copolymers

wherein

R is straight-chain or branched alkyl of 1 to 8 carbon atoms,

R_1 is hydrogen or methyl,

R_2 is alkyl of 1 to 6 carbon atoms,

m is an integer from 6 to 15 and each of r and s is 1 or 2;

or said copolymer of at least two of (1), (2) and (3) containing an additional monomer in a ratio of about 1:10 to 10:1 and selected from the group consisting of vinyl esters of organic acids, vinyl alkyl ketones, vinyl halides, acrylic nitrile or acrylic amide and derivatives thereof, which are substituted at

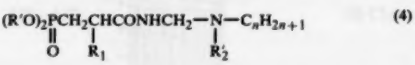
the amide nitrogen and α,β-unsaturated mono - or dicarboxylic acids containing 3 to 5 carbon atoms and esters thereof; and

b.25 to 0 percent by weight of at least one of

b_1. a homopolymer of (1), (2) or (3) having a molecular weight of about 2,000 to 50,000;

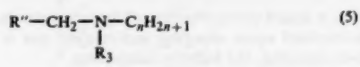
b_2. a homopolymer or copolymer of vinyl esters of organic acids, vinyl alkyl ketones, vinyl halides, acrylic nitrile or acrylic amide or derivatives thereof which are substituted at the amide nitrogen, or α,β-unsaturated mono- or dicarboxylic acids containing 3 to 5 carbon atoms or esters thereof, and having a molecular weight between about 2,000 and 50,000;

b_3. a compound of the formula



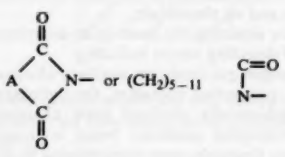
(4)

wherein R' is straight-chain or branched alkyl of 1 to 18 carbon atoms, R_1 is hydrogen or methyl, R_2' is hydrogen or C_nH_{2n+1} and n is an integer from 1 to 24; and b_4. a compound of the formula



(5)

wherein R'' is



wherein A is $-CH_2CH_2-$, $-CH=CH-$ or

R_3' is hydrogen or C_nH_{2n+1} and n is an integer from 1 to 24.

21. The synthetic organic fibrous material finished by the method according to claim **1**.

4,143,207

SEMICONDUCTIVE CERAMICS

Gen Itakura, Amagasaki, and Takashi Iguchi, Katano, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

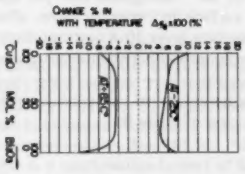
Filed Jan. 17, 1977, Ser. No. 759,807

Claims priority, application Japan, Jan. 20, 1976, 51-5648; Jan. 28, 1976, 51-8730; Feb. 13, 1976, 51-15016; Feb. 13, 1976, 51-15017; Mar. 16, 1976, 51-28728; Mar. 16, 1976, 51-28729; Mar. 16, 1976, 51-28730; Apr. 10, 1976, 51-40553

Int. Cl.[2] **H01B** *1/08;* **C04B** *35/46, 35/50;* **H01L** *21/38*

U.S. Cl. 428—539 **11 Claims**

1. Semiconductive ceramics characterized in that a composition comprising at least two of the following materials: copper oxide (Cu_2O), bismuth oxide (Bi_2O_3), manganese oxide (MnO_2) and lithium carbonate (Li_2CO_3), is thermally diffused as an insulating layer in the grain boundaries in a polycrystalline ceramic semiconductor mainly composed of strontium titanate ($SrTiO_3$) with small amounts of niobium oxide



(Nb_2O_5), tantalum oxide (Ta_2O_5) or bismuth oxide (Bi_2O_3) so that insulating layers are provided in said grain boundaries.

4,143,208

METHOD OF PRODUCING TUBES OR THE LIKE AND CAPSULE FOR CARRYING OUT THE METHOD AS WELL AS BLANKS AND TUBES ACCORDING TO THE METHOD

Christer Aslund, Torshälla, Sweden, assignor to Granges Nyby AB, Sweden

Division of Ser. No. 569,264, Apr. 18, 1975, Pat. No. 4,050,143. This application Nov. 22, 1976, Ser. No. 743,982

Claims priority, application Fed. Rep. of Germany, Apr. 19, 1974, 2419014

The portion of the term of this patent subsequent to Sep. 27, 1994, has been disclaimed.

Int. Cl.[2] **B22F** *3/00, 3/04, 3/20*

U.S. Cl. 428—558 **40 Claims**

1. A blank for extruding an elongated dense metal object, said blank comprising a metal container having metal powder compressed therein, said metal powder comprising metal particles that are substantially spherical, and said container being formed from a ductile metal, the wall thickness of said container being at most 5% of the outer diameter of said container, said metal container and the metal powder therein having been subjected to cold-isostatic pressure acting on all surfaces of said container so that said metal container and the metal powder therein are compressed together until the density of said metal powder therein reaches at least 80% of the theoretical density.

10. In a method for producing a blank for extruding an elongated dense metal object wherein metal powder is sealed in a metal container and the metal container with the metal powder therein is compressed, the improvement wherein (1) the metal powders of said metal powder are substantially spherical, (2) said container is formed from a ductile metal, (3) the wall thickness of said container is at most 5% of the outer diameter of said container, (4) said metal container is subjected to cold-isostatic pressure acting on all surfaces of said container, and (5) said metal container is compressed until the density of the metal powder therein reaches at least 80% of the theoretical density.

4,143,209

PROCESS FOR MAKING ZINC COATED STEEL WIRE AND PRODUCT MADE THEREBY

Michel Gerspacher, Heisdorf, Luxembourg, and Albert Cohen, Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jun. 7, 1977, Ser. No. 804,430

Int. Cl.[2] **B32B** *15/06*

U.S. Cl. 428—592 **12 Claims**

1. In a process for making a rubber adherable reinforcement wire which includes the steps of

(a) plating steel wire with brass so that the brass-plating has

a bulk copper concentration of from 62.5 to 70 weight percent and

(b) drawing the wire through dies to reach the desired diameter, the improvement which comprises depositing a layer of zinc over the brass before drawing in an amount of 5×10^{-5} to 50×10^{-5} milligrams zinc per square millimeter of coating surface in order to have, after drawing, an outermost surface layer 10 Angstrom thick having a copper content comprised between about 20 and 50 percent in weight.

9. A rubber adherable cord comprising a plurality of wires made by the process of claim 8.

4,143,210

MULTI-LAYER PLATING FOR IMPROVED CORROSION RESISTANCE

Jacob Hyner, Waterbury, and Stephen Gradowski, Torrington, both of Conn., assignors to Whyco Chromium Company, Inc., Thomaston, Conn.

Filed Sep. 30, 1977, Ser. No. 838,241
Int. Cl.[2] B32B *15/18*
U.S. Cl. 428—646 **9 Claims**

1. A multi-layer metallic plating for providing improved corrosion resistance to a ferrous metal substrate comprising:

(a) a first layer plated on said substrate selected from the group consisting of zinc and cadmium,

(b) a second layer of tin plated over said first layer, and

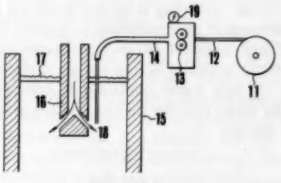
(c) a third layer selected from the group consisting of chromium and metallic chromium substitute selected from the group consisting of a ternary alloy comprising cobalt, tin and a third metal selected from antimony, zinc or a metal of Periodic Group III_A or VI_B, or a binary alloy comprising cobalt and tin, said third layer being plated over said second layer, the thickness of each of said first and second layers, respectively, ranging between 0.00001 to 0.001 inches and the thickness of said third layer ranging between 0.000001 to 0.0001 inches.

4,143,211

CONTINUOUS CASTING ADDITION MATERIAL

Tatsuichi Obinata, Tokyo; Kaname Wada, Kisarazu; Shigeaki Ogibayashi, and Hironobu Mihara, both of Kimitsu, all of Japan, assignors to Nippon Steel Corporation and Hitachi Cable Ltd., both of Tokyo, Japan

Division of Ser. No. 571,973, Apr. 28, 1975, Pat. No. 4,047,556.
This application Jun. 15, 1977, Ser. No. 806,961
Claims priority, application Japan, May 1, 1974, 49-48324
Int. Cl.[2] C21C *7/00*
U.S. Cl. 428—650 **3 Claims**



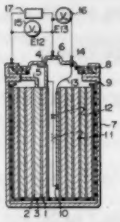
1. An addition material for use in continuous casting comprising an addition metal in the form of wire and a cover metal covering said addition metal, said cover being formed of a tape composed of a material consisting of of a low-reactive metal or alloy, having its side portions wrapped around the wire and overlapping each other along the tape's lengthwise direction and tightly covering said addition metal, the amount of overlap corresponding to an angle of not less than 15 degrees at the center of the addition metal wire.

4,143,212

SEALED STORAGE BATTERY

Mitsushi Ueno, Yokohama, and Tamotsu Shirogami, Yamato, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Oct. 17, 1977, Ser. No. 842,889
Claims priority, application Japan, Oct. 18, 1976, 51-123859; Oct. 18, 1976, 51-123860
Int. Cl.[2] H01M *10/34, 10/48*
U.S. Cl. 429—7 **38 Claims**



1. A sealed storage battery of the type wherein hydrogen gas is evolved upon charging and oxygen gas is evolved upon overcharging, the battery comprising:

(a) a sealed container;

(b) an electricity generating means contained in said sealed container and composed of a positive electrode, a negative electrode and an electrolyte;

(c) means for detecting the onset of an overcharging condition, said detecting means including

(i) a hydrogen gas oxidation auxiliary electrode disposed within said sealed container, the hydrogen gas being electrochemically oxidized upon charging and said electrochemical oxidation being interrupted at said auxiliary electrode upon overcharging by the evolution of oxygen gas;

(ii) a resistance means connected between said positive electrode and said auxiliary electrode and having and inverse current checking characteristic; and

(iii) a terminal disposed outside the battery for providing sensing contact with said auxiliary electrode, said terminal including an electrical lead connected to said auxiliary electrode.

4,143,213

CELLS HAVING CATHODES CONTAINING CHALCOGENIDE COMPOUNDS OF THE FORMULA M_aFEX_b AND SPECIES THEREOF EXHIBITING ALKALI METAL INCORPORATION

Allan J. Jacobson, Princeton, and M. Stanley Whittingham, Fanwood, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Apr. 26, 1978, Ser. No. 900,198
Int. Cl.[2] H01M *6/36*
U.S. Cl. 429—112 **16 Claims**

1. An electric current-producing cell, comprising:

(a) an anode having as its anode-active material one or more alkali metals;

(b) a cathode having as its cathode-active material one or more compounds selected from the group consisting of:

(i) chalcogenide compounds having the formula:

$$M_aFeX_b$$

wherein M is a metal selected from the group consisting of sodium, potassium, rubidium, cesium, calcium, strontium and barium, wherein X is a chalcogen selected from sulfur and selenium, wherein a is a numerical value of about 0.5 when M is a divalent metal and about 1 when M is a monovalent metal, and wherein b is a numerical value of about 2; and,

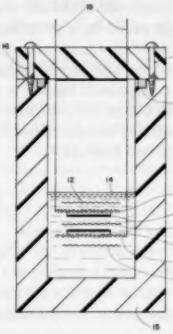
(ii) species of any of the chalcogenide compounds of said formula exhibiting alkali metal incorporation; and,

(c) an electrolyte which is chemically inert with respect to said anode and said cathode and which permits the migration of ions between anode and said cathode.

4,143,214
CELLS HAVING CATHODES CONTAINING C_xS CATHODE-ACTIVE MATERIALS

Chin H. Chang, Edison, and John M. Longo, New Providence, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jun. 26, 1978, Ser. No. 919,141
Int. Cl.² H01M 6/36
U.S. Cl. 429—112 **20 Claims**



1. An electric current-producing cell, comprising:

(a) an anode having as its anode-active material one or more alkali metals;

(b) a cathode having as its cathode-active material one or more carbon-sulfur compounds having the formula:

C_xS

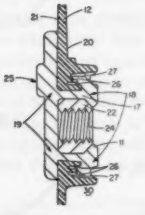
wherein x is a numerical value within the range of about 4 to about 50; and,

(c) an electrolyte which is chemically inert with respect to said anode and said cathode and which permits the migration of ions between anode and said cathode.

4,143,215
BATTERY CONTAINER HAVING CAST BATTERY TERMINAL FORMED THEREIN

Verlin A. Mocas, Indianapolis, Ind., assignor to The Richardson Company, Des Plaines, Ill.

Continuation of Ser. No. 301,568, Oct. 27, 1972, Pat. No. 3,874,933. This application Nov. 27, 1974, Ser. No. 527,726
Int. Cl.² H01M 2/30
U.S. Cl. 429—179 **18 Claims**

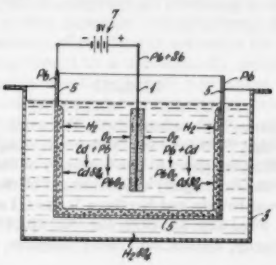


1. A battery container fabricated from a thermally deformable material, said battery comprising an outside wall having an interior and exterior surface and including a port, a terminal extending through said port to provide electrical conduction between the interior and exterior of said container, said terminal having a unitary body formed by casting from molten metal directly in place within said port, said unitary body including an integral inside flared end portion which extends in surrounding relation to said port and in fluid tight sealing relation directly with the interior surface of said outside wall.

4,143,216
LEAD CRYSTAL STORAGE CELLS AND STORAGE DEVICES MADE THEREFROM

Rudolf R. Hradcovsky, and Otto R. Kozak, both of Long Beach, N.Y., assignors to Solargen Electronics, Ltd., New York, N.Y.

Continuation-in-part of Ser. No. 781,762, Mar. 28, 1977, abandoned, which is a continuation-in-part of Ser. No. 768,909, Feb. 15, 1977, abandoned. This application Mar. 16, 1978, Ser. No. 887,359
Int. Cl.² H01M 6/04
U.S. Cl. 429—204 **22 Claims**



1. A solid conductor for use in storage cells comprised of a carrier plate made from a material selected from the group consisting of lead, an alloy of lead with antimony and an inert, non-conductive substance coated with lead or an alloy of lead with antimony, and a uniform, adherent and durable layer of an active mass on said carrier plate, said active mass consisting essentially of crystalline and an effective amount of polycrystalline lead superoxide in which lead is at its maximum valence of four and wherein said polycrystalline lead superoxide is characterized by an X-ray diffraction pattern substantially as shown in FIGS. 5A or 5B.

4,143,217
PROCESS FOR MANUFACTURE OF POSITIVE ELECTRODE FOR LITHIUM/METAL SULFIDE SECONDARY CELL

Louis A. Joo', and Frederick C. Miller, both of Johnson City, Tenn., assignors to Great Lakes Carbon Corporation, New York, N.Y.

Filed Oct. 3, 1977, Ser. No. 838,756
Int. Cl.² H01M 4/36
U.S. Cl. 429—218 **9 Claims**

1. A method for the manufacture of a positive electrode for a secondary electrochemical cell including a lithium or lithium alloy negative electrode, said alloy being selected from the group consisting of the solid alloys with zinc, aluminum or silicon, a fused salt electrolyte of the eutectic mixture of lithium and potassium chlorides, and a porous separator, the improvement comprising the steps of:

(a) mixing metal sulfide selected from the group consisting of the sulfides of iron, copper, cobalt and nickel or mixtures thereof and a filler which sublimes or decomposes at a temperature less than 1000° C. to form gaseous reaction products selected from the group consisting of cellulose, polyethylene, ammonium bicarbonate, aluminum chloride, lignin sulfonate, and pregelled starch;

(b) placing the mixture thus formed in a rigid mold;

(c) compressing said mixture to form a shaped rigid molded part;

(d) impregnating said molded part with a liquid thermosetting resin selected from the group consisting of phenol-formaldehyde and furan based resins, in solution or hot melt under alternate cycles of vacuum and pressure;

(e) cross-linking or hardening said liquid resin to a solid, between 100°–200° C. for 1 to 12 hours;

(f) repeating steps d) and e) above until said molded part has a composition of about 15% by wt. resin solids of the total composition; and

(g) carbonizing said resin in said molded part and simultaneously subliming or decomposing said filler to gaseous reaction products by increasing the temperature to a temperature less than 1000° C. in an inert atmosphere for a period of 3 to 6 days.

4,143,218

POLYMERIC MATERIALS

Lionel B. Adams, Shrivenham; Keith V. Lovell, Swindon; Gordon Partridge, Swindon, and Barbara J. Ringrose, Swindon, all of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Sep. 12, 1977, Ser. No. 832,478

Claims priority, application United Kingdom, Sep. 14, 1976, 38076/76

Int. Cl.[2] H01M *2/16*

U.S. Cl. 429—254 **16 Claims**

1. A method of treating a film of hydrophilic polymeric material selected from graft copolymers in which a hydrophilic comonomer is grafted on to a hydrophobic base polymer, sulphonated polymers, and polymers containing a quaternary ammonium group, which includes the steps of

a. immersing, at a temperature in excess of 80° C., said film of polymeric material in a liquid treatment material consisting of a liquid which is mainly organic and contains hydroxyl groups or ions and is capable of swelling the said hydrophilic polymeric material, and

b. removing the liquid treatment medium by quenching the said film to about room temperature and washing the said polymeric film in a wash liquid selected from cold water or dilute alkaline solution.

4,143,219

FLAME RETARDED POLYURETHANE FOAMS HAVING REDUCED DISCOLORATION

Edward J. Hensch, Park Ridge, N.J., assignor to Stauffer Chemical Company, Westport, Conn.

Filed May 20, 1977, Ser. No. 798,964

Int. Cl.[2] C08K *5/46, 5/52*

U.S. Cl. 521—107 **10 Claims**

1. A flame retardant polyurethane foam comprising a low density polyurethane foam derived from a polyether polyol a flame retardant amount of a flame retardant comprised of a poly(haloethyl-ethyleneoxy) phosphoric acid ester and from about 0.25 percent to about 5.0 percent by weight of said flame retardant of phenothiazine wherein said low density polyurethane foam does not scorch on curing in the absence of a flame retardant.

4,143,220

POLYURETHANES PREPARED WITH NOVEL MANNICH BASES

Erwin Müller, and Heinz Thomas, both of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

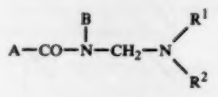
Continuation of Ser. No. 495,136, Aug. 6, 1974, abandoned, which is a continuation-in-part of Ser. No. 357,965, May 7, 1973, abandoned, and a continuation-in-part of Ser. No. 398,264, Sep. 17, 1973, abandoned. This application Feb. 17, 1976, Ser. No. 658,644

Claims priority, application Fed. Rep. of Germany, May 15, 1972, 2223427; Sep. 20, 1972, 2246108

Int. Cl.[2] C08G *18/14, 18/18*

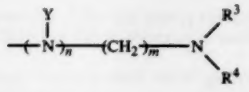
U.S. Cl. 521—129 **6 Claims**

1. Semi-rigid polyurethane foams having high bond strengths with acrylonitrile-butadiene-styrene or polyvinyl chloride polymers prepared by a process comprising reacting in the presence of blowing agents and optionally in the presence of catalysts and/or stabilizers, organic polyisocyanates with polyhydroxyl compounds having a molecular weight of about 800 to about 10,000 in the presence of from 3 to 50 parts by weight per 100 parts by weight of polyhydroxyl compound, of a Mannich base of the formula:

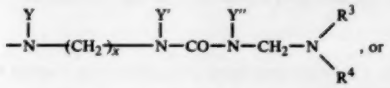


wherein

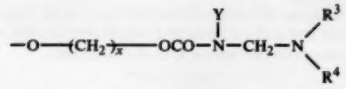
A is (1) or $-OR^9$,



(2)



(3)



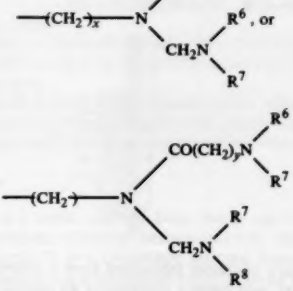
(4)

m is an integer of from 1 to 8, preferably 1 or 2;

n is an integer equal to 1 when m is 1 and otherwise is 0.

x is an integer of from 1 to 6;

B is —H, C_1–C_{16} alkyl, or when A is (1) or A is (2) and n is 0,



but preferably —H;

y is an integer from 2 to 8, but preferably 2;

R^1 through R^9 are the same or different and are C_1–C_{12} alkyl and,

Y, Y' and Y'' are the same or different and are —H or C_1–C_{16} alkyl, the amounts of reactants being such that the NCO to active hydrogen ratio is from about 0.9:1 to about 1.1:1.

4,143,221
MANUFACTURE OF BROMINATED POLYMERIZATION PRODUCTS OF STYRENE

Herbert Naarmann, Wattenheim; Klaus Penzien, Frankenthal, and Wolfgang Schulte, Hassloch, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Oct. 25, 1977, Ser. No. 844,927

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1976, 2651435

Int. Cl.² C08F *8/22*

U.S. Cl. 526—44 **8 Claims**

1. A process for the manufacture of brominated polymerization products of styrene which comprises:

(a) cationically polymerizing styrene or a mixture of styrene with copolymerizable monomers in solution in the presence of a Lewis acid catalyst to a mean molecular weight (number average) of from 800 to 8,000 for the polymerization product,

(b) adding bromine to the reaction solution obtained in step a) to brominate the polymerization product,

(c) washing the reaction solution with water after the completion of the bromination reaction until it is bromide-free, and then

(d) separating and isolating the brominated polymerization product from the solvent.

4,143,222
METHOD OF CONTROLLING THE MOLECULAR WEIGHT OF VINYL CARBOXYLIC ACID-ACRYLAMIDE COPOLYMERS

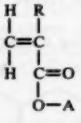
Louis A. Goretta, Naperville, and Robert R. Otremba, Chicago, both of Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.

Continuation-in-part of Ser. No. 825,795, Aug. 18, 1977, abandoned. This application Mar. 27, 1978, Ser. No. 890,107

Int. Cl.² C08F *220/06, 222/38*

U.S. Cl. 526—64 **5 Claims**

1. A method for preparing copolymers of acrylamide and vinyl carboxylic acids, said vinyl carboxylic acids having the formula prior to polymerization:



wherein R is H or CH_3 and A is selected from the group consisting of hydrogen or alkali metal ions, said method comprising the steps of polymerizing an aqueous solution of the vinyl carboxylic acid with acrylamide in an adiabatic packed tube reactor at a pressure of between 50–350 psig said pressure being sufficient to maintain the reactants in a liquid state in the presence of a free radical catalyst while maintaining the conditions of the reaction within the limits set forth below:

I.	Monomer solids	5–50% by weight
II.	Initiation temperature	Room temp. - 250° F.
III.	Monomer pH	2–6;
IV.	Initiator concentration	0.5–30% by weight;
V.	Vinyl carboxylic acid-acrylamide weight ratio	25/75–75/25;

-continued

VI.	Residence time	1–15 min.

said copolymer of acrylamide and the vinyl carboxylic acid having a molecular weight of from 3,000 to 300,000.

4,143,223
PROCESS FOR POLYMERIZING ALPHA-OLEFINS AND CATALYST THEREFOR

Akinori Toyota, Iwakuni; Syuji Minami, Ohtake, and Norio Kashiwa, Iwakuni, all of Japan, assignors to Mitsui Petrochemical Industries Ltd., Tokyo, Japan

Filed Mar. 1, 1977, Ser. No. 773,266

Claims priority, application Japan, Mar. 1, 1976, 51-21179

Int. Cl.² C08F *4/02, 10/06*

U.S. Cl. 526—125 **4 Claims**

1. A process for preparing a highly stereo-regular polymer or copolymer, which comprises polymerizing an α-olefin having at least 3 carbon atoms or copolymerizing said α-olefin with a minor amount of ethylene or a diene in the presence of a catalyst comprising (A) a mechanically pulverized solid halogen-containing titanium catalyst component and (B) an organoaluminum compound, and also in the presence of an aromatic carboxylic acid ester having from 8 to 40 carbon atoms, said solid halogen-containing titanium catalyst component being obtained by reacting (I) a mechanically copulverized solid component consisting essentially of and being derived from

1. a magnesium compound of the formula

$$MgX^1X^2$$

wherein X^1 is a halogen atom and X^2 is a member selected from the group consisting of halogen atoms and OR'' in which R'' is selected from the group consisting of alkyl groups, cycloalkyl groups and aryl groups,

2. an organic acid ester selected from the group consisting of esters formed between a member selected from the group consisting of saturated or unsaturated aliphatic carboxylic acids containing 1 to 18 carbon atoms and halogen-substituted products of saturated or unsaturated aliphatic carboxylic acids containing 1 to 18 carbon atoms and a member selected from the group consisting of saturated or unsaturated aliphatic primary alcohols containing 1 to 18 carbon atoms, saturated or unsaturated cycloaliphatic alcohols containing 3 to 8 carbon atoms, phenols containing 6 to 10 carbon atoms, saturated or unsaturated primary alcohols containing 1 to 4 carbon atoms which are bonded to an aliphatic ring with 3 to 10 carbon atoms and saturated or unsaturated primary alcohols containing 1 to 4 carbon atoms which are bonded to an aromatic ring with 6 to 10 carbon atoms; esters formed between alicyclic carboxylic acids containing 6 to 12 carbon atoms and saturated or unsaturated aliphatic primary alcohols containing 1 to 8 carbon atoms; esters formed between aromatic carboxylic acids containing 7 to 18 carbon atoms and saturated or unsaturated aliphatic primary alcohols containing 1 to 18 carbon atoms, saturated or unsaturated cycloaliphatic alcohols containing 3 to 8 carbon atoms, phenols containing 6 to 10 carbon atoms, saturated or unsaturated primary alcohols containing 1 to 4 carbon atoms which are bonded to an aliphatic ring with 3 to 10 carbon atoms or saturated or unsaturated primary alcohols containing 1 to 4 carbon atoms which are bonded to an aromatic ring with 6 to 10 carbon atoms; and lactones containing 4 to 10 carbon atoms, and

3. an active hydrogen-containing compound selected from the group consisting of aliphatic alcohols containing 1 to 12 carbon atoms, alicyclic alcohols containing 3 to 12 carbon atoms, aromatic alcohols containing 7 to 12 carbon atoms and phenols containing 6 to 18 carbon atoms,

wherein the ratio between the magnesium compound (1) and the organic acid ester (2) is such that the latter is used

in an amount of about 0.01 to about 10 moles per atom of magnesium, and the amount of the active hydrogen-containing compound (3) is about 0.001 to about 10 moles per atom of magnesium in the magnesium compound (1);
in the absence of mechanical pulverization and at a reaction temperature of about 20° to about 200° C. with (II) a tetravalent titanium compound which is liquid under the reaction conditions and has the formula

$$Ti(OR)_gX_{4-g}$$

wherein R is a hydrocarbon radical selected from the group consisting of alkyl groups containing 1 to 4 carbon atoms, cycloalkyl groups containing 6 to 12 carbon atoms and aryl groups containing 6 to 10 carbon atoms, X is a halogen atom, and g is $0 \leqq g \leqq 4$, at a ratio of titanium atom to magnesium atom of at least 0.05:1.

4,143,224

PROCESS FOR THE MANUFACTURE OF SUSPENSION POLYMERS OF VINYL CHLORIDE

Heinz Klippert; Ingolf Mielke, both of Burgkirchen, Alz, and Otto Plewan, Neuötting, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 16, 1978, Ser. No. 878,230

Claims priority, application Fed. Rep. of Germany, Feb. 19, 1977, 2707259

Int. Cl.[2] C08F *14/06*

U.S. Cl. 526—200 **7 Claims**

1. A process for the manufacture of polymers of vinyl chloride containing at least 50% by weight of polymerized vinyl chloride units, by suspension polymerization of the monomer(s) in aqueous phase, at a temperature of from 10° to 90° C., in the presence of oil-soluble catalysts, comprising a total of from 0.03 to 0.4% by weight, relative to the monomer(s) used, of a suspension auxiliary mixture, which contains

(a) from 0.01 to 0.1% by weight, relative to the monomer(s) used, of a partially acetylated polyvinyl alcohol having from 5 to 25% by weight of acetate groups and a viscosity of from 2 to $100 \cdot 10^{-3}$ Pas (measured on a 4% by weight aqueous solution at 20° C.);

(b) from 0.01 to 0.1% by weight, relative to the monomer(s) used, of at least one of the following cellulose ethers having a viscosity of from 5 to $500 \cdot 10^{-3}$ Pas (measured on a 2% by weight solution at 20° C.): methyl cellulose, methylhydroxyethyl cellulose or methylhydroxypropyl cellulose, the molar substitution degree of the methoxy group being about 1.4 to about 2.4, that of the hydroxyalkoxy group, if present, being from about 0.08 to about 0.28; or hydroxyethyl cellulose or hydroxypropyl cellulose the molar substitution degree of which being about 1 to about 3.5;

(c) from 0.01 to 0.2% by weight, relative to the monomer(s) used, of a partially acetylated polyvinyl alcohol having from 31 to 35% by weight of acetate groups and a viscosity of from 10 to 18 cm^3/g (measured according to German Industrial Standard DIN 53 728 in methanol at 20° C., at a concentration of 10 g/l).

4,143,225

HOMOPOLYMERS OF A FLUORENONE DERIVATIVE HAVING PENDANT ELECTRON ACCEPTOR GROUPS

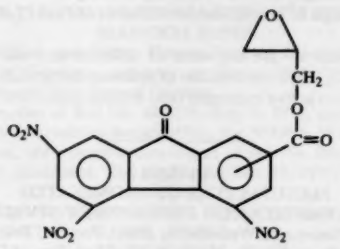
Sam R. Turner, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 596,690, Jul. 16, 1975, Pat. No. 4,062,886. This application May 23, 1977, Ser. No. 799,845

Int. Cl.[2] C08G *65/02, 2/00, 2/16*

U.S. Cl. 528—220 **1 Claim**

1. Homopolymers comprising the product of the addition polymerization of a monomer represented by the structural formula



4,143,226

PROCESS FOR PREPARING A SULFATE ESTER OF A POLYHYDROXY POLYMER

Richard G. Schweiger, 1324 Rimrock Dr., San Jose, Calif. 95120

Division of Ser. No. 669,483, Mar. 23, 1976, Pat. No. 4,035,569, which is a continuation of Ser. No. 487,196, Jul. 10, 1974, abandoned, which is a continuation-in-part of Ser. No. 298,580, Oct. 18, 1972, abandoned, which is a continuation-in-part of Ser. No. 40,442, May 25, 1970, Pat. No. 3,702,843. This application Apr. 11, 1977, Ser. No. 786,209

Int. Cl.[2] C08B *5/14*

U.S. Cl. 536—59 **8 Claims**

1. A process for simultaneously preparing a sulfate ester of cellulose and an alkyl nitrite comprising:

reacting a nitrite ester of cellulose with sulfur trioxide or a complex thereof at a reaction temperature of about 0° to about 25° C. to obtain a mixed nitrite:sulfate ester of cellulose;

said reaction being carried out in the presence of dinitrogen tetroxide;

reacting said mixed ester with an alcohol containing up to about 10 carbon atoms;

said alcohol reacting with the nitrite groups in said mixed ester and also with dinitrogen tetroxide to produce an alkyl nitrite and to free the mixed ester of nitrite groups.

4,143,227

PROCESS FOR SUBSTITUTED 5-BENZYL-2,4-DIAMINO-PYRIMIDINES

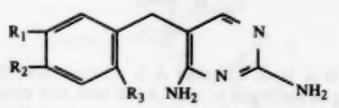
Perry Rosen, North Caldwell, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 564,518, Apr. 2, 1975, abandoned, which is a continuation of Ser. No. 336,094, Feb. 26, 1973, abandoned. This application Jun. 10, 1977, Ser. No. 805,506

Int. Cl.[2] C07D *239/48;* A61K *31/505*

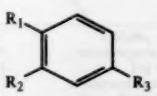
U.S. Cl. 544—325 **2 Claims**

1. A process for preparing a compound of the formula

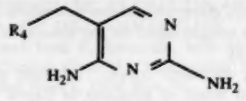


wherein R_1 and R_2 are lower alkoxy or taken together are methylenedioxy; R_3 is lower alkyl or hydrogen,

which comprises the step of reacting an aromatic compound of the formula



wherein R_1, R_2 and R_3 are as previously described, with a diamino-pyrimidine of the formula



wherein R_4 is lower alkoxy, benzyloxy, hydroxy or halogen, in the presence of an inorganic or organic acid selected from the group consisting of ortho-phosphoric acid, poly-phosphoric acid, hydrohalic acids and tri-haloacetic acids, at a temperature in the range of from about 50° C. to about 110° C.

4,143,228

PYRAZOLINYL INDOLIUM DYESTUFFS

Hubertus Psaar, and Winfried Kruckenberg, both of Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

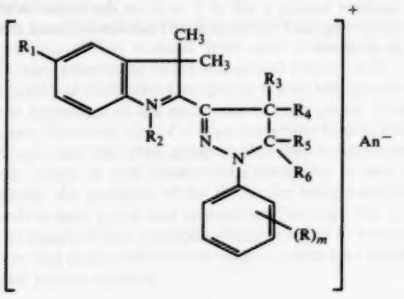
Filed Aug. 23, 1977, Ser. No. 826,999

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1976, 2638232

Int. Cl.² C07D *403/04*

U.S. Cl. 548—379 **5 Claims**

1. Methine dyestuff of the formula



wherein

R is chlorine, bromine, nitro, cyano, C_1-C_4-alkyl, C_1-C_4-alkoxy, C_1-C_4-alkoxycarbonyl, C_1-C_4-alkylsulphonyl, phenylsulphonyl, aminocarbonyl, or aminosulphonyl;

R_1 is hydrogen, C_1-C_4-alkyl, trifluoromethyl, chlorine, bromine, nitro, cyano, C_1-C_4-alkoxy, C_1-C_4-alkoxycarbonyl, methylcarbonylamino, ethylcarbonylamino, phenylcarbonylamino, aminocarbonyl, aminosulphonyl, C_1-C_4-alkylsulphonyl, or phenylsulphonyl;

R_2 is phenyl, benzyl, C_1-C_4-alkyl, or C_1-C_4-alkyl substituted by hydroxyl, chlorine, cyano, or aminocarbonyl;

R_3 and R_4 are hydrogen or C_1-C_4-alkyl;

R_5 and R_6 are hydrogen, C_1-C_4-alkyl or phenyl;

m is o, 1, 2 or 3;

An^- is an anion; and

additionally at least one radical R must be a substituent of the formulae

$$-O-(B_1-O)_{p_1}-E_1;$$

$$-O-CO-F_1-O-(B_1-O)_{p_1}-E_1; \text{ or}$$

$$-(O-F_1)_{q_1}-CO-O-(B_1-O)_{p_1}-E_1$$

wherein

B_1 is C_2-C_4-alkylene;

E_1 is hydrogen, C_1-C_4-alkyl, C_2-C_4-alkenyl, halo-C_1-C_4-alkyl, halo-C_2-C_4-alkenyl, cyano-C_1-C_4-alkyl, cyano-C_2-C_4-alkenyl, formyl, phenylcarbonyl, phenyl-C_1-C_6-alkylcarbonyl, phenoxy-C_1-C_6-alkylcarbonyl, phenyl-C_1-C_6-alkyl, C_1-C_4-alkylcarbonyl, halo-C_1-C_4-alkylcarbonyl, cyano-C_1-C_4-alkylcarbonyl C_1-C_4-alkoxy-C_1-C_4-alkylcarbonyl, C_2-C_4-alkenylcarbonyl, halo-C_1-C_4-alkenylcarbonyl, cyano-C_2-C_4-alkenylcarbonyl, or C_1-C_4-alkoxy-C_2-C_4-alkenylcarbonyl;

F_1 is C_1- or C_2-alkylene;

p_1 is 2 or 3; and

q_1 is 0 or 1.

4,143,229

PROCESS FOR THE PREPARATION OF PARA-SUBSTITUTED DERIVATIVES OF ALPHA-PHENYLPROPIONIC ACID

Massimo Sabbatini, Milan, Italy, assignor to Alcar S.R.L., Milan, Italy

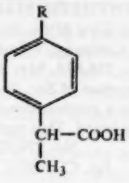
Filed Apr. 25, 1977, Ser. No. 790,549

Claims priority, application Italy, Apr. 23, 1976, 22610 A/76

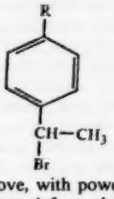
Int. Cl.² C07C *63/52*

U.S. Cl. 562—496 **6 Claims**

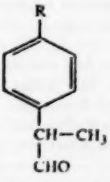
5. A process for the preparation of alpha-phenyl propionic acid derivatives of the formual:



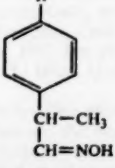
wherein R is a straight or branched chain lower alkyl of 1 to 6 carbon atoms, which comprises treating a bromide of the formula:



wherein R is defined above, with powdered magnesium and then with a member selected from the group consisting of ethyl formate and ethyl-ortho formate followed by reaction with a hydrolyzing agent to afford an aldehyde of the formula:



wherein R is as defined above; treating said aldehyde with hydroxylamine to give an oxime of the formula:



wherein R is defined above; then treating said oxime in an aqueous medium, in the presence of a member selected from the group consisting of a strong alkali and a strong acid, at a temperature between about 100° C. and about 200° C. until the elimination of ammonia is complete to give the desired propionic acid.

4,143,230

MANUFACTURE OF 2-(ALKYL, ALKENYL OR ALKYNYL) 3-CARBALKOXYALKYL KETONES FROM ALPHA, BETA-UNSATURATED KETONES

Andrew E. Greene, St. Martin d'Uriage, and Pierre Crabbé, Meylan, both of France, assignors to CHON Corporation, Cambridge, Mass.

Filed Oct. 28, 1976, Ser. No. 736,469

Int. Cl.[2] C07C *51/34*

U.S. Cl. 562—504 **11 Claims**

1. A simple, high yield process which comprises effecting the conjugate addition of an allyl copper reagent to cyclopentenone so as to form the copper enolate of 3-allylcyclopentanone; alkylating the enolate with a pentyne so as to form the trans 2-pentyne, 3-allylcylopentanone; subjecting the trans 2-pentyne, 3-allylcyclopentanone to ozonolysis and oxidatively cleaving the ozonolysis product so as to form dehydrajasmonic acid.

4,143,231

BUTINEDIOL USING CATALYST PREPARED FROM SYNTHETIC MALACHITE

Joseph M. Fremont, Glen Mills, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 794,674, May 6, 1977, Pat. No. 4,107,082, which is a continuation of Ser. No. 687,179, May 17, 1976, abandoned, which is a continuation-in-part of Ser. No. 445,476, Feb. 25, 1974, abandoned. This application Jan. 16, 1978, Ser. No. 870,024

Int. Cl.[2] C07C *33/04*

U.S. Cl. 568—855 **1 Claim**

1. In the production of 1,4-butynediol by reaction of acetylene and formaldehyde in the presence of a cuprous acetylide catalyst, the improvement comprising use of a catalyst consisting essentially of a particulate cuprous acetylide complex having uniformly dispersed therein bismuth in the amount of 2 to 5 percent by weight based on the amount of copper present and produced by

precipitating hydrated copper carbonate particles by the addition to water of solutions of cupric salts and alkali metal carbonate or bicarbonate to form a reaction mixture, said solutions being in such proportions as to maintain the pH about in the range of 5.0 to 8.0,

nucleating and converting the hydrated copper carbonate to basic copper carbonate in the reaction mixture at a temperature of at least about 60° C., and

growing agglomerates of the nucleated crystalline particles by precipitating basic copper carbonate containing bismuth by the addition to the reaction mixture of solutions of cupric salts, bismuth salts and alkali metal carbonate or bicarbonate in such proportions as to maintain the pH about in the range of 5.0 to 8.0 with the reaction mixture at a temperature of at least about 60° C. until the average cross-sectional dimension of the agglomerates of crystallites is at least about 10 microns, and then

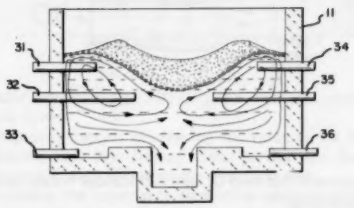
subjecting the agglomerated basic copper carbonate as a slurry in aqueous medium at 50° to 120° C., to the simultaneous action of formaldehyde and acetylene at a partial pressure of not more than 2 atmospheres, said aqueous medium having a pH of 3 to 10 at the initiation of said subjecting, and continuing the reaction until said complex is obtained.

ELECTRICAL

4,143,232
FURNACE HAVING DIFFERENT ELECTRODE IMMERSIONS TO CONTROL CONVECTION CURRENTS, THE SHAPE, ELEVATION AND STABILITY OF THE FUSION ZONE

Bihari Bansal, and Paul F. Spremulli, both of Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Nov. 1, 1976, Ser. No. 737,616
Int. Cl.² C03B 5/02
U.S. Cl. 13—6 **28 Claims**



1. Apparatus for the melting of thermoplastic material comprising:

a vertical furnace,

batch feeder means for supplying batch to an upper part of said furnace,

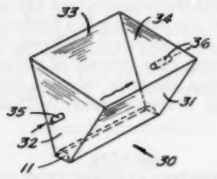
outlet means formed in the bottom of said furnace for withdrawing molten material from said lower part of said furnace subsequent to the refinement thereof, and

a plurality of electrodes arranged in at least two groups with the immersion of the electrodes in each group being the same, the electrodes of at least one group having a longer length than the other group so that they extend closer to the center of said furnace than electrodes in said other group, the positions of the electrodes being symmetrical within each group and symmetrical between the groups, the length of said electrodes being selected to control the size and shape of the fusion zone between said batch and said molten material.

4,143,233
SOLAR ENERGY COLLECTOR

Narinder S. Kapany, Woodside, Calif.; Edgar E. Hardy, Kettering, and Thomas A. Orofino, Centerville, both of Ohio, assignors to Monsanto Research Corporation, St. Louis, Mo.

Filed Jun. 6, 1977, Ser. No. 803,494
Int. Cl.² H01L 31/04
U.S. Cl. 136—89 PC **11 Claims**

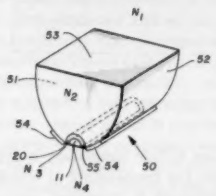


1. A solar energy collector comprising a transparent hollow trough-shaped body having a closed bottom, an open top, sides which are shaped so said body is wider at the top than at the bottom and two ends, containing a liquid in the trough of said body to increase the acceptance angle of solar energy into said collector and promote total internal reflectance, the outside of said body being in contact with a material of lower refractive index sufficient to cause solar energy to be reflected back into said body, and means to remove energy from said collector.

4,143,234
SOLAR COLLECTOR USING TOTAL INTERNAL REFLECTANCE

Gregory R. Johnson, University City; Malcolm G. Miles, Olivette, both of Mo.; Ival O. Salyer, and Edgar E. Hardy, both of Dayton, Ohio, assignors to Monsanto Company, St. Louis, Mo.

Filed Nov. 8, 1976, Ser. No. 739,769
Int. Cl.² H01L 31/06
U.S. Cl. 136—89 PC **4 Claims**



1. A solar cell device comprising a photoelectric cell having the form of rod of a semiconducting monocrystalline element or compound of elements, said rod having a body in the form of at least an arcuate section of a cylinder, a p-n junction adapted to receive solar radiation spaced at a distance radially inwardly from the outer surface of said body and extending within at least a portion of said body parallel to the outer surface and forming a surface layer on said arcuate surface of said body, a first electrode secured to said body and a second electrode secured to a portion of said surface layer, such that incident solar radiation strikes said surface layer, said first and second electrodes being insulated from one another; in combination with a non-imaging collector, said collector having the form of a trough, having sides generally curved in shape, said photoelectric cell being secured to and extending along the bottom of said collector, said bottom of said collector having a grooved recess formed therein along its length, said grooved recess being in the form of an arcuate section of a cylinder whose diameter is at least as great as the diameter of said rod shaped photoelectric cell, whereby said photoelectric cell is accomodated in and secured to said recess, said collector being wider at the top than at the bottom wherein radiant energy, accepted by said collector over an area larger than the surface area of said photoelectric cell, will be concentrated upon said cell, said collector comprising a transparent body of material having an index of refraction intermediate that of the surface of said photoelectric cell and air such that incident solar radiation is retained within said collector and concentrated upon said rod by total internal reflectance; said collector having means for specular reflection, constituted by a mirrored surface placed on certain areas of the surface of said collector where otherwise partial internal reflectance would occur.

4,143,235
CADMIUM SULFIDE PHOTOVOLTAIC CELL AND METHOD OF FABRICATION

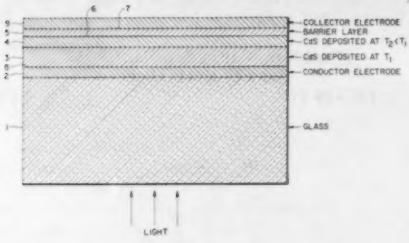
Jack A. Duisman, El Cerrito, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Dec. 30, 1977, Ser. No. 866,082
Int. Cl.² H01L 31/06
U.S. Cl. 136—89 CD **13 Claims**

1. An improved cadmium sulfide photovoltaic cell comprising a cadmium sulfide bilayer, the bilayer being formed by deposition in interfacial contact with the substrate of an initial layer of cadmium sulfide formed at a first temperature and deposition of a second layer of cadmium sulfide formed at a second temperature which is at least 20° C. below the first temperature at which the initial cadmium sulfide layer is deposited, said second cadmium sulfide layer being in interfacial contact with a barrier layer.

8. A method of fabricating an improved cadmium sulfide

photovoltaic cell which comprises forming a cadmium bilayer by deposition of a cadmium sulfide lamination on another cadmium sulfide lamination, wherein the temperature at which



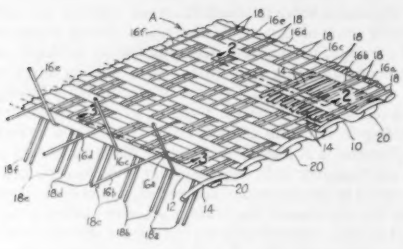
the initial cadmium sulfide lamination is deposited is at least about 20° C. above the temperature at which the second cadmium sulfide lamination is deposited, said second cadmium sulfide layer being in interfacial contact with a barrier layer.

4,143,236

CONTROLLED IMPEDANCE CABLE

Edgar A. Ross, and Odes D. Tatum, both of Greenville, S.C., assignors to Southern Weaving Company, Greenville, S.C.

Filed Nov. 26, 1976, Ser. No. 745,249
Int. Cl.[2] H01B *7/08, 11/04*
U.S. Cl. 174—32 **10 Claims**



1. A woven electrical transmission cable for transmitting high-frequency signals having a controlled impedance comprising:

a plurality of longitudinal conductor wires arranged in a substantially side-by-side relationship for transmitting said signals;

a pair of longitudinal ground wires carried between next adjacent conductor wires longitudinally coextending in a substantially parallel relationship with said conductor wires providing an independently associated ground wire on each said of each respective conductor wire to isolate each said conductor wire;

said conductor wires and ground wires interwoven with insulating fiber strands defining a woven pattern;

said woven pattern including said insulating fiber strands woven in the warp and filling directions; said conductor wires being woven in said woven pattern so as to have an undulating shape; and

said associated ground wires being spaced from each respective conductor wire in said woven pattern so as to isolate and fix the impedance of each said conductor wire at a desired impedance value;

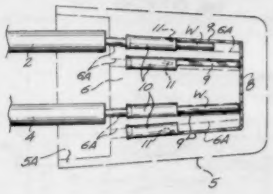
whereby the impedance of each conductor wire may be matched regardless of conductor wire symmetry for producing transmission of uniform signals with reduced cross-talk interference.

4,143,237

ELECTRICAL WIRE CONNECTOR

Geoff C. Atkins, 55315 McKenzie Hwy., Blue River, Oreg. 97413

Filed Feb. 24, 1978, Ser. No. 880,999
Int. Cl.[2] H01R *5/02*
U.S. Cl. 174—87 **6 Claims**



1. A connector for two or more electrical wires, said connector comprising,

a dielectric mass defining a multitude of sockets,

a conductive member within said mass and having a plurality of wire receiving sleeves, said sleeves one each substantially concentric with one each of said sockets and inset from an exposed surface of said dielectric mass, and

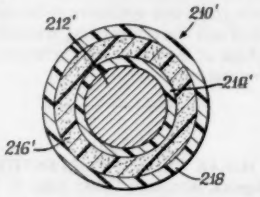
an outer skirt portion of said dielectric mass extending outwardly beyond said exposed surface thereof.

4,143,238

SHIELDED ULTRA-MINIATURE CABLE

Ramesh D. Sheth, Richmond, Ind., assignor to Belden Corporation, Geneva, Ill.

Filed Feb. 28, 1977, Ser. No. 772,633
Int. Cl.[2] H01B *7/18*
U.S. Cl. 174—107 **13 Claims**



1. A shielded ultra-miniature low voltage cable comprising at least one low voltage conductor, an internal insulation coating surrounding said conductor and a semiconductive coating surrounding and providing a ground shield for said insulation coated conductor, the materials of the insulation and semiconductive coatings being thermoplastic and having melting temperatures equal to or less than that of a predetermined soldering temperature in order to permit soldering of said shielded cable without requiring prior removal of said semiconductive and insulation coatings, the cable having a maximum outside diameter in the range of approximately 0.025 inches.

4,143,239

SIGNAL DISTORTION CORRECTION CIRCUIT IN TELEPRINTER EQUIPMENT

Hans E. Hultman, and Alexander Strid, both of Järfälla, Sweden, assignors to U.S. Philips Corporation, New York, N.Y.

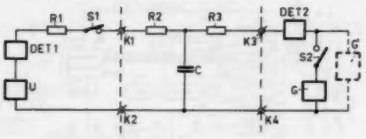
Filed Dec. 12, 1977, Ser. No. 859,545
Claims priority, application Sweden, Dec. 29, 1976, 7614647
Int. Cl.[2] H03K *5/00*
U.S. Cl. 178—68 **10 Claims**

1. A method of transmitting dc pulses in a teleprinter communication system along a line which has a capacitance depending upon the length of the line and which includes a

variable impedance element in series with the line comprising the steps of:

producing a current flow during a time interval following the closing of the line path at the beginning of a current pulse;

changing the value of the impedance element to a high first



value immediately following the commencement of current flow;

subsequently rapidly decreasing the value of the impedance element to a low second value so that the line current flowing is kept substantially constant; and

maintaining the impedance element at said low second value to the end of the pulse.

4,143,240

CO-ORDINATE PLATE FOR CO-ORDINATE READER

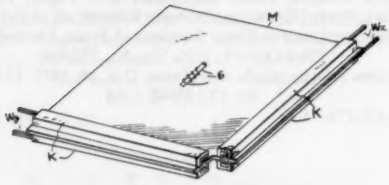
Toshihiko Kobayashi, Mitaka, and Tetsusaburo Kamibayashi, Niza, both of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Japan

Filed Mar. 8, 1977, Ser. No. 775,467

Claims priority, application Japan, Mar. 10, 1976, 51-25869; Apr. 23, 1976, 51-46226

Int. Cl.[2] G08C *21/00*

U.S. Cl. 178—19 **15 Claims**



1. A co-ordinate plate for a co-ordinate reader, comprising: a thin plate of magnetostrictive material having a co-ordinate plane and similar magnetostrictive oscillating wave propagation characteristics in directions of at least two co-ordinate axes of the co-ordinate plane, two exciting coils for producing magnetostrictive oscillation in the thin plate of magnetostrictive material in one and the other of the two co-ordinate directions of the co-ordinate plane, and flux keepers for shielding magnetic fluxes emanating from the exciting coils, said thin plate of magnetostrictive material having holes arranged in a matrix form in the co-ordinate plane so that many first and second oscillating wave propagation paths are formed at predetermined intervals along the two co-ordinate axes, respectively.

4,143,241

SMALL DIGITAL TIME DIVISION SWITCHING ARRANGEMENT

William L. Aranguren, Sayreville, and Rollin E. Langseth, Colts Neck, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 10, 1977, Ser. No. 805,411

Int. Cl.[2] H04J *3/12*; H04Q *11/04*

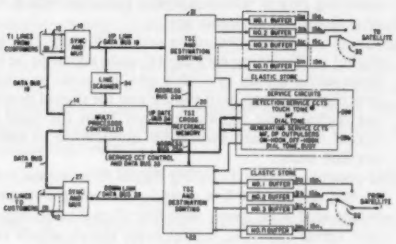
U.S. Cl. 179—15 AQ **5 Claims**

1. A small digital time-division switching arrangement for interfacing with a plurality of m synchronized and multiplexed two-way digital time-division communication system channels on one side of the arrangement and a plurality of n multiplexed two-way digital time-division transmission channels and a plurality of s peripheral service circuits on the other side of the arrangement, each of the channels propagating data and directive signalling bits in an associated plurality of sequential time slots thereof, the arrangement comprising:

means for scanning the directive signalling bits received in the sequential time slots of the plurality of m synchronized and multiplexed digital time-division communication system channels;

a multiprocessor controller comprising a first microprocessor, a second microprocessor and an intercommunication channel interconnecting said microprocessors, said first and second microprocessors being arranged to (a) detect changes in corresponding sequentially received directive signalling bits scanned by said scanning means and generate an appropriate output signal in response to a detected change for implementing a predetermined action by the arrangement, and (b) generate appropriate directive signalling bits for transmission through the arrangement and in preselected time slots of the plurality of m communication system channels and the plurality of n transmission channels;

means for storing the output signals of said multiprocessor controller and for generating a separate appropriate switching signal in synchronism with the appearance of



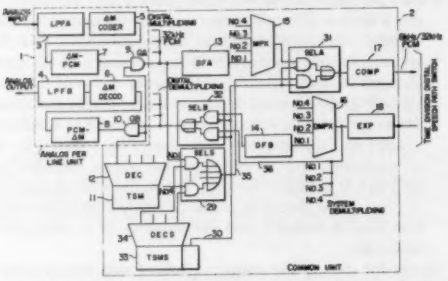
data and directive signalling bits in each of the time slots of the synchronized and multiplexed plurality of m two-way communication system channels for interrelating each of said time slots with either one of a particular one of the time slots of the plurality of n transmission channels and a particular one of the plurality of s peripheral service circuits; and

a time slot interchanging means comprising a first and a second memory section for storing signals propagating in a first and a second direction, respectively, between the interfaced plurality of m two-way communication system channels and both the plurality of n two-way transmission channels and the plurality of s peripheral service circuits, each memory section comprising a plurality of memory locations with each of said memory locations being assigned to a separate one of the time slots associated with each channel of said plurality of n transmission channels and an appropriate one of said plurality of s peripheral service circuits, the pair of memory sections being concurrently responsive to the reception of each of said separate appropriate switching signals generated by said storing and switching signal generating means to transfer data and signalling bits bidirectionally between the time slots of the plurality of m communication system channels and either one of the time slots of said plurality of n transmission channels and said plurality of s peripheral circuits.

4,143,242
ANALOG-DIGITAL CODE CONVERTER IN A DIGITAL TELEPHONE SWITCHING SYSTEM

Akira Horiki, Yokohama, Japan, assignor to Hitachi, Ltd., Japan

Filed Jul. 13, 1977, Ser. No. 815,422
Claims priority, application Japan, Jul. 14, 1976, 51-82992; Jul. 8, 1977, 52-80996
Int. Cl.[2] H04J *3/16*
U.S. Cl. 179—15 BW **6 Claims**



1. An analog-digital code converter in a digital telephone switching system comprising:

a plurality of analog per line units each including conversion means for effecting conversion between an analog voice signal and a high speed sampling digital code signal, the sampling rate of which is higher than that which results in an ordinary voice band; and

common means connected to said analog per line units for digital multiplexing said digital code signal to be supplied from said plurality of analog per line units to a time division digital speech path switch and for digital demultiplexing digital code signals supplied from the time division digital speech path switch for application to said analog per line units;

said common means including digital filter means connected to said analog per line units for effecting conversion between said high speed sampling digital code signal and a low speed sampling digital code signal which results in said ordinary voice band, highway means for carrying said low speed sampling digital code signal from said digital filter means to said digital speech path switch and bypass means for bypassing said digital filter means by applying said high speed sampling digital code signal from said analog per line units to said digital speech path switch.

4,143,243
TELEPHONE SYSTEM

Paula J. Sutton, 300 Park West, New York, N.Y. 10024

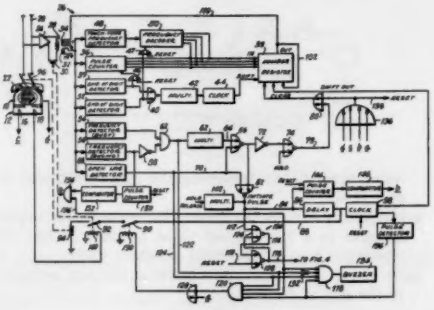
Continuation of Ser. No. 643,322, Dec. 22, 1975. This application Sep. 1, 1977, Ser. No. 829,724
The portion of the term of this patent subsequent to Oct. 4, 1994, has been disclaimed.
Int. Cl.[2] H04M *1/44*
U.S. Cl. 179—90 B **20 Claims**

1. An attachment for a telephone set which dials telephone numbers onto a telephone line, or the like, said attachment comprising:

(a) storing means coupled to said telephone set for storing a telephone number at the same time as it is initially dialed and transmitted onto the telephone line;

(b) signal detector means coupled to said telephone set for detecting the receiving of a busy signal in response to the initial dialling of said telephone number and in the absence thereof clearing said storing means; and

(c) control means coupled to said signal detector means responding to the receipt of a busy signal and the releasing of the telephone line for causing the number stored to be cyclically re-dialed onto the telephone line, said control means comprising holding switch means for immediately disconnecting said control means from the telephone line to thereby temporarily prevent re-dialing of the number stored onto the telephone line, and further comprising means responsive to the operation of said holding switch means for continuing operation of the control means until

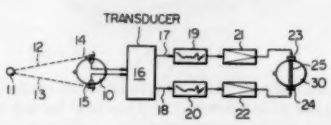


the end of a re-dialing cycle and then temporarily suspending further operation of said control means while maintaining the number stored in said storing means and for preventing said storing means from storing further numbers and preventing signal detector means from detecting further busy signals.

4,143,244
BINAURAL SOUND REPRODUCING SYSTEM

Makoto Iwahara; Fumio Maruyama; Goro Fujiki; Toshinori Mori; Norio Hiyama, and Mitsuru Kikuchi, all of Yokohama, Japan, assignors to Victor Company of Japan, Limited, Japan

Filed Dec. 21, 1976, Ser. No. 752,964
Claims priority, application Japan, Dec. 26, 1975, 50/157194
Int. Cl.[2] H04R *5/04*
U.S. Cl. 179—1 G **1 Claim**



1. A method of compensating for differences between the acoustic characteristic of a dummy head simulating a human head and the acoustic characteristic of a listener, comprising the steps of:

generating acoustic energy varying in frequency with time in an audible range to give a constant sound pressure level at a given point of a listening area throughout said frequency range;

plotting the sound pressure at ears of said listener located at said given point as a function of frequency to determine the acoustic characteristic of said listener;

locating said dummy head at said given point to receive said acoustic energy at the artificial ears of the dummy head and connecting the received energy to a stereophonic sound reproduction system to produce a signal representative of said acoustic energy at the ears of said listener;

successively delaying said signal in a respective channel of the sound reproduction system;

providing weighting factors to the nondelayed and successively delayed signals;

summing up the weighted signals; and

adjusting each of said weighting factors such that the sound pressure level at the ears of said listener varies identically

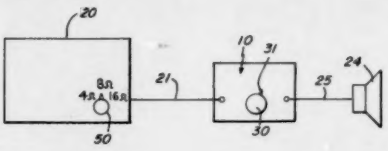
with said determined acoustic characteristic of said listener.

4,143,245

CONSTANT DISTORTION VOLUME CONTROL

Donald T. Scholz, 13 Rich Valley Rd., Wayland, Mass. 01778

Filed Mar. 3, 1978, Ser. No. 883,145
Int. Cl.[2] H03G 9/00
U.S. Cl. 179—1 VL **7 Claims**



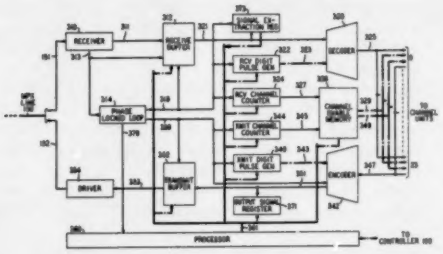
1. For an amplifier and speaker system, a volume control device coupled between the amplifier and speaker for controlling the output volume level of the system while maintaining substantially constant distortion from the amplifier, said volume control device comprising, a variable impedance means having a first part in series with the speaker and a second part across the speaker manual control means for controlling the impedance means to alter the first and second parts in a complementary manner and at least one calibration display means associated with the manual control means having at least two segments thereon for indicating proper impedance match between the amplifier and speaker depending upon the position of the manual control means.

4,143,246

TIME DIVISION LINE INTERFACE CIRCUIT

Nicholas K. Smith, Naperville, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 6, 1977, Ser. No. 830,447
Int. Cl.[2] H04J 3/06
U.S. Cl. 179—15 BS **10 Claims**



1. Apparatus, for use with a communication switching system, for receiving and transmitting serial streams of digital data comprising:

an incoming transmission line;

means connected to said incoming line and adapted to generate timing pulses representative of the bit rate of an incoming stream of data appearing on said line;

clock means responsive to said timing pulses for generating clock pulses synchronized to said bit rate;

a program controlled processor including a stored program comprising sequences of instructions; and

accessing means interconnecting said incoming transmission line and said processor;

said program controlled processor including means responsive to said synchronized clock pulses for executing program instructions in synchronism with said bit rate, said processor program including one or more input accessing instructions for causing said processor to access said incoming transmission line via said accessing means and other instructions, one of said accessing instructions being executed each time after execution of a preselected number of said other instructions, whereby said processor accesses said incoming transmission line in synchronism with the bit rate of an incoming bitstream on a periodic basis without timed interrupts.

5. A telecommunications switching system having connected thereto a multiplexed PCM digital trunk adapted to transmit a plurality of data channels and comprising a switching network comprising a plurality of network terminals and an interface circuit interconnecting said network terminals and said PCM trunk, said interface circuit comprising:

a digital transfer circuit connected between said switching network terminals and said multiplexed PCM digital trunk and comprising an input signal demultiplex circuit, an output signal multiplex circuit, a clock circuit, and a processor;

said clock circuit having an input terminal connected to said PCM trunk and an output terminal connected to said demultiplex circuit, said multiplex circuit, and said processor and responsive to incoming PCM data pulses appearing on said trunk for generating, at said clock circuit output terminal, clock pulses in synchronism with the PCM bit rate of an incoming data system;

said processor comprising a stored program and timing circuitry responsive to said clock signals for controlling the execution of said program in synchronism with the bit rate of the incoming bitstream;

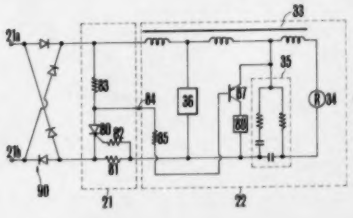
said processor being connected to said input signal demultiplex circuit and to said output signal multiplex circuit and said processor stored program being arranged to periodically fetch data from said input signal demultiplex circuit and periodically transfer information to said output signal multiplex circuit in synchronism with the bit rate of the incoming bitstream.

4,143,247

AUTOMATIC SIGNAL LEVEL ADJUSTING CIRCUITS FOR USE IN TELEPHONE SETS

Makoto Yoshitoshi, Musashino; Isao Kawashima, Yokosuka; Hideo Kishimoto; Masaaki Terai, both of Yokohama, and Kazumi Kato, Hino, all of Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan

Filed Oct. 25, 1977, Ser. No. 844,969
Claims priority, application Japan, Nov. 2, 1976, 51-132061
Int. Cl.[2] H04M 1/00
U.S. Cl. 179—81 R **15 Claims**



14. An automatic signal level adjusting circuit for use in a telephone set comprising, a current detecting resistance element connected in series with a loop for supplying current to said telephone set, a semiconductor controlled rectifier with its gate and cathode electrodes connected across said resistance element, and an impedance connected in series with the anode electrode of said controlled rectifier for adding AC loss, said serially connected controlled rectifier and said impedance being connected in parallel across said loop.

4,143,248

HIGH FIDELITY PHONOGRAPH PICK-UP ARM

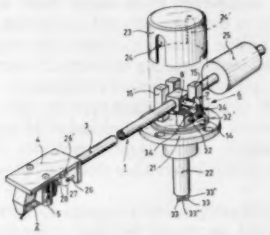
Egbert Broeksema, and Elzo Smit, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 24, 1976, Ser. No. 726,174

Claims priority, application Netherlands, Sep. 29, 1975, 7511413

Int. Cl.[2] G11B 3/10

U.S. Cl. 179—100.4 R 10 Claims



1. A high-fidelity phonograph pick-up arm comprising a shank formed from a composite material consisting essentially of high strength fibres embedded in a synthetic resin; a head connected to the shank at one end, the head including means for mechanically attaching and electrically connecting a phonograph pick-up; bearing means remote from said head end for mounting the pick-up arm in a bearing block, consisting of bearing journals formed with said shank as a unitary element, the composite material providing structural connection between the head and the bearing journals; a plurality of electrical conductors extending from the head to a bearing journal and connected at the head end to said means for electrically connecting; and means for making electrical connection to said conductors at the bearing block, wherein said electrical conductors are embedded in said composite material, and in at least a part of the bearing journals.

4,143,249

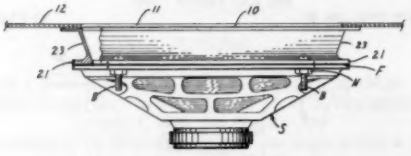
REAR DECK MOUNTING ADAPTER FOR CAR SPEAKER

Michael J. Cinquino, North Miami Beach, Fla., assignor to Richard S. First, North Miami Beach, Fla., a part interest

Filed Apr. 24, 1978, Ser. No. 899,316

Int. Cl.[2] H04R 1/28; H04M 1/04

U.S. Cl. 179—146 E 3 Claims



1. A mounting adapter for suspending a speaker below a deck having an oblong opening therein, said adapter comprising:

a peripheral top flange for attachment to said deck at said opening therein, said top flange bordering an oblong top opening which corresponds substantially to said deck opening;

a peripheral bottom flange spaced below said top flange and bordering a bottom opening which is appreciably less oblong and more circular than said top opening and said deck opening, said bottom flange being attachable to a speaker having a mouth at its upper end which corresponds substantially to said bottom opening;

and a rigid annular sidewall tapering from said bottom flange around said bottom opening up to said top flange around said top opening for funneling sound coming from the mouth of the speaker to said deck opening.

4,143,250

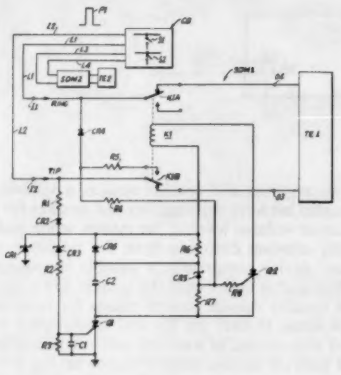
TELEPHONE ISOLATION SYSTEM

Frank L. Simokat, Babylon, N.Y., assignor to TII Corporation, Lindenhurst, N.Y.

Filed Dec. 13, 1976, Ser. No. 749,610

Int. Cl.[2] H04B 3/46

U.S. Cl. 179—175.3 R 3 Claims



1. For use in a system between a communication provider and a subscriber of the type which includes a provider network and a respective subscriber network, and wherein said provider network includes means for transmitting diagnostic switching signals to said subscriber network, an isolation system for responding to said disagnostic switching signals to transiently disconnect said subscriber network from said provider network, said isolation system comprising:

(1) switching means connecting said provider network to said subscriber network in one state and disconnecting said networks in a second state;

(2) a first switch control circuit connected to said provider network and having (a) pulse responsive means connected to respond to a short duration diagnostic switching signal, and (b) energy storage means responsive to said pulse responsive means;

(3) a second switch control circuit including a controlled rectifier having a control circuit connected to be responsive to said energy storage means and an output circuit connected to control actuation of said switching means; and (4) a charge circuit connected to said energy storage means for maintaining a charge on said energy storage means during periods when said networks are interconnected.

4,143,251

CIRCUITRY AND METHOD FOR LOCATING BURIED CABLE SPLICES

Brian D. Clark, Mesa, Ariz., assignor to Progressive Electronics, Inc., Mesa, Ariz.

Filed Oct. 28, 1977, Ser. No. 846,372

Int. Cl.[2] H04B 3/46

U.S. Cl. 179—175.3 A 11 Claims

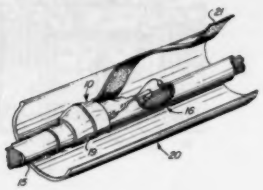
1. A method of locating a point along a pair of conductors comprising the steps of:

(a) coupling a transmitter to said pair of conductors close to said point;

(b) concealing said pair of conductors, said point, and said transmitter;

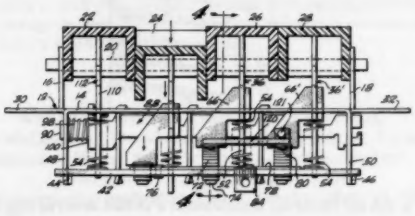
(c) inducing power into said pair of conductors to provide operating power to said transmitter;

(d) conducting power from said pair of conductors to said transmitter;
(e) operating said transmitter at a first frequency in response to said power; and
(f) varying the position of a receiver tuned to said first frequency to maximize the field strength of a signal received from said transmitter, wherein said pair of conductors is



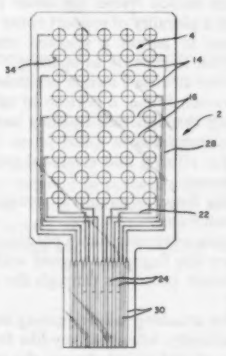
included in a main telephone cable and wherein said transmitter includes a pair of power receiving conductors, and wherein said method includes the step of splicing a telephone extension line to conductors of said main telephone cable, and connecting said power receiving conductors of said transmitter to said pair of conductors at the location of said splicing.

4,143,252
REMOTE CONTROL SWITCH FOR SELECTIVE OPERATION OF MULTIFILAMENT LAMPS
Fernley S. Moore, 3419 SE. 22nd Pl., Cape Coral, Fla. 33904
Filed Sep. 12, 1977, Ser. No. 832,590
Int. Cl.[2] H01H *9/20*
U.S. Cl. 200—5 B **9 Claims**



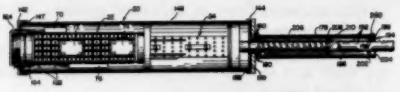
1. A remote control push actuated switch assembly for a multifilament incandescent lamp to selectively complete electric circuits thereto to achieve low, medium or high intensities of illumination comprising,
a frame including a main base portion providing opposed ends, a pair of upstanding ears and a pair of downwardly extending legs from said opposed ends;
a plurality of individually depressable switch actuators and an elongated pivot rod carried by said ears and extending therebetween with said switch actuators pivotally carried thereon;
an insulation plate fixed relative to lower ends of said legs and extending therebetween,
an elongated contact and conductor plate fixed to said insulation plate including a first terminal,
said plurality of individually depressable switch actuators comprises first, second and third "on" switch actuators and an "off" switch actuator and including an elongated spring conductor associated with and positioned relative to each of said "on" switch actuators, including a first end provided with a contact means and second end provided with a second terminal fixed to said insulation plate.
means operated by said first, second and third "on" switch actuators to complete a first circuit from an appropriate electrical source to a first filament of the multifilament lamp, when said first "on" switch actuator is depressed, a second circuit to a second filament of the multifilament lamp when said second "on" switch actuator is depressed and a third circuit to the first and second filaments when said third "on" switch actuator is depressed;
means to automatically lock any one of said first, second or third switch actuators in its depressed position;
means to release any one of said first, second or third "on" switch actuators from its depressed position when a second switch actuator is depressed;
adaptor means to interconnect said third "on" switch actuator with said second "on" switch actuator to complete said third circuit;
means to release any one of said "on" switch actuators from its depressed position when said "off" switch actuator is depressed.

4,143,253
OPTICALLY CLEAR MEMBRANE SWITCH
Richard M. Wagner, Harrisburg, and Richard H. Zimmerman, Palmyra, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.
Filed Apr. 25, 1977, Ser. No. 790,635
Int. Cl.[2] H01H *9/26;* **C25D** *5/02, 5/34*
U.S. Cl. 200—5 A **8 Claims**



1. A transparent laminate having at least one membrane switch therein, said laminate comprising:
first, second, and third laminated sheets of transparent film, said first and third sheets being of a cellulose acetate material, said second sheet being between said first and third sheets, said first and third sheets having internal surfaces which are against said second sheet, said second sheet having an opening therein, said opening constituting a switch point,
each of said internal surfaces having an electro-deposited hairline conductor thereon, said conductors crossing, and being normally spaced from each other, at said switch point,
said hairline conductors having been produced on said internal surfaces by the steps of rendering said surfaces conductive by electroless deposition of a thin blanket coating of conductive metal on said surfaces, selectively depositing a thick plating along lines which define said hairline conductors, and thereafter selectively etching away said blanket coating and leaving said hairline conductors on said surfaces.

4,143,254
WATERPROOF MULTIPLE ELECTRICAL SWITCH ASSEMBLY
Pablo M. Heyrana, 1839 R St. NW., Washington, D.C. 20009
Filed Apr. 25, 1977, Ser. No. 790,418
Int. Cl.[2] H01H *15/00, 9/00*
U.S. Cl. 200—16 R **25 Claims**

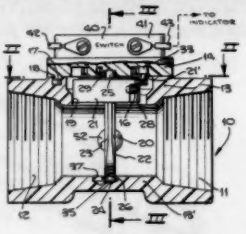


1. A reciprocating switch assembly including:
(a) a tubular switch frame, the outer periphery of which comprises a plurality of support zones,
(b) means separating said support zones for permitting a selected zone or zones to be knocked out to provide an opening
(c) at least one electrical switch mounted on the periphery of said switch frame
(d) said electrical switch including triggering means, a portion of which extends inwardly of said tubular switch frame
(e) a reciprocating member movable in and out of said switch frame, and
(f) at least one projection positioned on said reciprocating member in alignment with said triggering means, said projection engaging said triggering means when the reciprocating member is moved longitudinally of said tubular switch frame for activation by said projection to change the electrical state of said switch.

18. A reciprocating switch assembly including:
(a) a tubular switch frame, the outer periphery of which comprises a plurality of support zones separated by weakened areas to permit a selected zone or zones to be knocked out to provide an opening,
(b) at least one electrical switch positioned on the periphery of said switch frame, a portion of said electrical switch protruding through said opening and inwardly of said tubular switch frame,
(c) means for affixing said electrical switch to said tubular switch frame,
(d) a key-like finger of tubular construction slidable within said switch frame,
(e) at least one triggering hump positioned on the periphery of said key-like finger and aligned with the portion of said switch which protrudes through the switch frame opening, and
(f) means for attaching said triggering hump to said key-like finger, whereby, when said key-like finger is moved longitudinally of said switch frame, the triggering hump engages the portion of the switch protruding through to activate the switch and change the electrical state thereof.

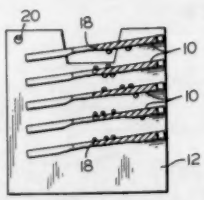
4,143,255
DEVICE FOR DETECTING FLUID FLOW
Jack Herscovitz, 544 W. 182nd St., Gardena, Calif. 90248
Filed Sep. 19, 1977, Ser. No. 834,278
Int. Cl.[2] H01H *35/40*
U.S. Cl. 200—81.9 M **17 Claims**

1. In a device for detecting fluid flow comprising a tubular section through which fluid can flow, paddle means mounted in the tubular section for being moved to a flow position by fluid flowing through the tubular section, and biasing means biasing the paddle means to a no-flow position, the improvement comprising:
signaling means in the tubular section for signaling when the paddle means is in one of its positions, the paddle means having a head at the top of the paddle means and an axle depending from the head, the paddle means pivoting about the axle, the signaling means comprising a magnet mounted in the head of the paddle means such that the magnet pivots about the axis of the axle when the paddle means pivots, switch means mounted adjacent the tubular section for receiving a signal from the signaling means and for activating an indicator when it receives a signal for indicating the position of the paddle means, the switch



means having means sensitive to the magnetic field whereby when the paddle means pivots about the axle between orientations, the magnetic field around the switch means changes causing the switch means to sense the change to activate the indicator.

4,143,256
ARC CHUTE HAVING PLATES COATED WITH WELD DETERENT MATERIAL
Ronald D. Ciarcia, Bristol, Conn., assignor to General Electric Company, New York, N.Y.
Filed Mar. 17, 1977, Ser. No. 778,420
Int. Cl.[2] H01H *33/08*
U.S. Cl. 200—144 R **7 Claims**

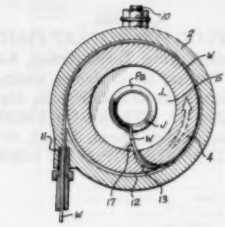


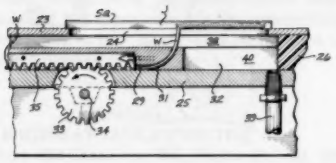
1. An arc chute for utilization in a circuit interrupting device to extinguish an arc created during a circuit interruption, said arc chute comprising, in combination:
A. a plurality of metallic arc plates;
B. insulative means mounting said arc plates in closely spaced, parallel relation; and
C. a high temperature resistance, weld deterent, exterior coating completely covering all exposed surfaces of said arc plates, said coating being sufficiently thin to permit arc penetration thereof and cooling of the arc by said metallic arc plates.

4,143,257
WELDING WIRE FEED MECHANISM
Karl H. F. W. Herrmann, Edmonds, Wash., assignor to Nova-Tech Engineering, Inc., Edmonds, Wash.
Filed Apr. 2, 1976, Ser. No. 673,353
Int. Cl.[2] B23K *9/02*
U.S. Cl. 219—60 A **12 Claims**

1. Welding mechanism comprising:
work-holding means for holding two workpieces in stationary relationship forming an elongated joint location;
welding wire feed means including a welding wire feeder member movable relative to said work-holding means and welding wire supply means stationary relative to said work-holding means, said feeder member and said weld-

ing wire supply means being in adjacent relationship and cooperatively forming a welding wire-receiving groove therebetween, said feeder member having a welding wire feed passage directed toward said joint location at one end and directed toward said welding wire-receiving groove at the other end;





means guiding said welding wire feeder member for movemengt of said welding wire feed passage progressively alon the length of said joint location; and

means for melting at said joint location welding wire supplied to said joint location through said welding wire feed passage as said welding wire feed passage is moved relative to said work-holding means.

4,143,258

WELDING MICROSTRUCTURE CONTROL

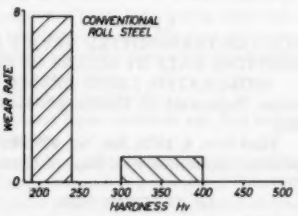
John McCann, and Trevor Bagshaw, both of Sheffield, England, assignors to British Steel Corporation, London, England

Filed Feb. 17, 1977, Ser. No. 769,561

Claims priority, application United Kingdom, Feb. 27, 1976, 7838/76

Int. Cl.² B23K 9/04, 9/18

U.S. Cl. 219—73 **4 Claims**



1. A method of applying a hard facing to an iron or steel former having a composition other than that of the hard facing comprising melting a consumable electrode on to the former by a submerged arc welding process and moving the former and the welding head relative to one another to deposit a bead of heat treatable precipitation hardening martensitic stainless steel weld metal on to the former, the consumable electrode being chosen to give a said deposited weld metal comprising by weight, from 0.03% to 0.12% carbon, from 0.20% to 0.75% silicon, from 0.50% to 1.50% manganese, from 4.50% to 6.50% nickel, from 12.0% to 17.0% chromium, from 1.5% to 2.0% molybdenum, from 1.2% to 2.0% copper, from 0.2% to 0.9% niobium, up to 0.04% sulphur, up to 0.04% phosphorus and up to 0.06% nitrogen, the balance being iron and incidental impurities, the ratio of nickel and copper to the carbide forming elements being chosen to achieve a microstructure of between 3% and 10% delta-ferrite in the interdentritic regions thereof.

4,143,259

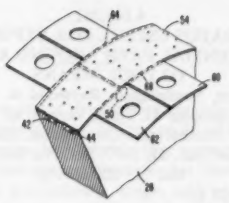
METHOD OF FABRICATING STAINLESS STEEL ALUMINUM ROTOR

Charles D. Hurd, Boulder, and Robert P. Loomis, Longmont, both of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 617,872, Sep. 29, 1975, Pat. No. 4,068,270. This application Jun. 13, 1977, Ser. No. 805,948

Int. Cl.² B23K 9/00

U.S. Cl. 219—121 EM **11 Claims**



1. A method of bonding a first member to a second member, both members being metallurgically incompatible, said method comprising the steps of:

anchoring pieces of metals into the body of the first member, said pieces of metal being metallurgically incompatible with said first member;

placing a second member in contact with said pieces, said second member being metallurgically compatible with said pieces of metals; and

electron beam welding said second member onto said pieces of metals.

4,143,260

MULTI ELECTRODE TORCH

Göran Bäckström, Karlskrona, and Orvar Svensson, Täby, both of Sweden, assignors to Fagersta Aktiebolag, Fagersta, Sweden

Continuation of Ser. No. 515,862, Oct. 18, 1974, abandoned. This application Jun. 23, 1976, Ser. No. 698,531

Claims priority, application Sweden, Oct. 26, 1973, 7314537

Int. Cl.² B23K 9/00

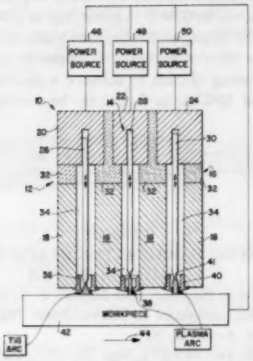
U.S. Cl. 219—121 P **7 Claims**

1. Welding apparatus comprising a torch body,

at least first and second non-consumable electrodes, means for adjustably mounting said electrodes in said torch body for vertical positioning therein with respect to each other and to a workpiece,

at least first and second mutually interchangeable nozzles, means for removably and interchangeably mounting said nozzles in said torch body, said nozzles being adapted to be employed in conjunction with either of said electrodes, and wherein said first nozzle in conjunction with either one of said electrodes is constructed to provide an open

arc between said electrode and said workpiece, and said second nozzle in conjunction with the other of said electrodes is constructed to provide a constricted arc between said electrode and said workpiece.

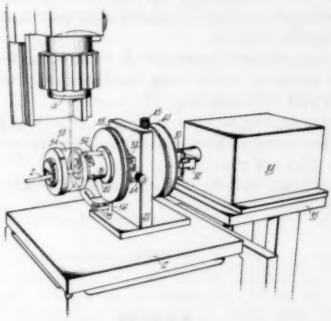


4,143,261

APPARATUS USEFUL FOR EXPOSING A CIRCUMFERENTIAL PATH AROUND A WORKPIECE TO TOOL MEANS

Frederick Eckart, Southington; Raymond A. Elliott, Glastonbury, and Christopher H. Feigl, Vernon, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 21, 1977, Ser. No. 862,710
Int. Cl.[2] B23K *9/00*
U.S. Cl. 219—121 L **11 Claims**



1. An apparatus useful for exposing an oval-like workpiece girth comprised of planar and radial surfaces to tool means while maintaining the surfaces in a fixed plane relative to the tool means as each is exposed thereto, comprising:

(a) a base in a fixed plane relative to the tool means;

(b) means for effecting relative translational motion between the base and tool means;

(c) bearing and shaft means, the shaft means including chuck means, mounted on the base for establishing the planar portions of the workpiece girth in a prescribed fixed plane as each is exposed to the tool means and for rotating the workpiece independently about longitudinal axes through the radii of the radial portions of the girth; and

(d) means for rotating the bearing and shaft means and thus the workpiece fixtured thereon;

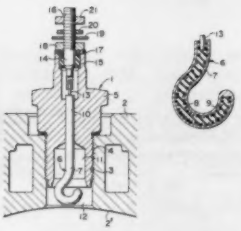
said girth being exposed to the tool means by effecting sequential translational motion between the base on which the workpiece is fixtured and tool means and rotational motion independently about said longitudinal axes, the translational motion being utilized to expose the planar surfaces of the workpiece girth to the tool means and the rotational motion being utilized to expose the radial surfaces of the girth to the tool means while maintaining said radial surfaces in the fixed plane established by the planar surfaces as each is exposed to the tool means.

4,143,262

SHEATH GLOW PLUG FOR ROTARY PISTON ENGINES

Nobutaka Morimitsu, Toyota; Tomio Kumoi, Kariya, and Katsuhiko Tsuruta, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jun. 27, 1977, Ser. No. 810,891
Claims priority, application Japan, Mar. 3, 1977, 52-23191
Int. Cl.[2] F23Q *7/00;* **F02P** *19/02;* **H05B** *3/48*
U.S. Cl. 219—270 **2 Claims**



1. A sheath glow plug for rotary piston engines adapted to be mounted within an engine plug hole so as not to project from said plug hole and to be traversed by a flow of fuel-air mixture temporarily trapped in said plug hole, comprising, a plug housing adapted to be secured in said plug hole, an elongated metallic protective tube of a relatively small diameter when compared with the diameter of said plug hole and having such a length as to provide a substantially straight root portion at which it is supported to extend from said housing with said root portion lying in a plane and, at its terminating end, a hook-shaped free tip portion having a closed end spaced from said root portion and said housing, said root and tip portions both being entirely disposed within said plug hole when the glow plug is mounted therein, said hook-shaped free tip portion lying in substantially the same plane as said root portion, a helical heater coil made of a substantially uniform heating wire and mounted in said protective tube and being disposed in said root and tip portions thereof, the pitch of said heater coil being smaller at said hook-shaped free tip portion than at said root portion, and electrical terminal means mounted in said housing in electrical connection with said heater coil and adapted to connect said heater coil to a power source.

4,143,263

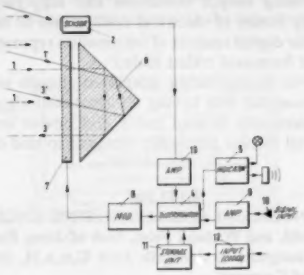
RECEIVER-TRANSMITTER DEVICE FOR TRANSMITTING DATA BY MEANS OF FOCUSED MODULATED, LIGHT BEAMS

Kurt Eichweber, Bodenwald 28, Hamburg-Niendorf, Fed. Rep. of Germany

Filed Nov. 6, 1975, Ser. No. 629,386
Claims priority, application Fed. Rep. of Germany, Nov. 8, 1974, 2453077
Int. Cl.[2] H04B *9/00*
U.S. Cl. 250—199 **12 Claims**

1. A light beam receiver-transmitter system comprising an optical retro-reflector for reflecting an encoded input light beam back toward the source thereof as an answer light beam, electro-optical masking means operable for selectively masking and unmasking the retro-reflector for selectively blocking and unblocking at least one of said beams and thereby selectively prevent the transmission of an answer light beam to the source of the input beam, and control means for operating the electro-optical masking means for normally masking the retro-

reflector, the control means comprising a sensor for sensing a code of an encoded input light beam, discriminating means for determining if a sensed code of an input light beam is a predetermined code, and mask control means operable by the discriminating means for operating the electro-optical masking means for unmasking the retro-reflector for transmitting an answer light beam back to said source when an encoded input light beam has said predetermined code.

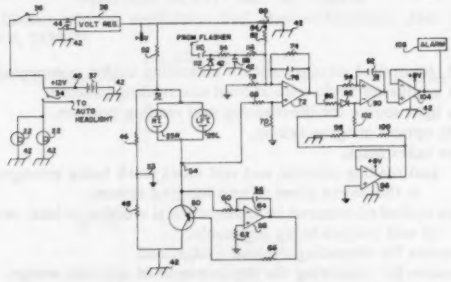


4,143,264

HIGHWAY LINE DETECTOR

William J. Gilbert, 912 Chatterson Rd., Huntsville, Ala. 35802, and Ronald W. Klassen, 2502 Pentelope Rd., Huntsville, Ala. 35803

Filed Oct. 20, 1977, Ser. No. 843,973
Int. Cl.[2] H01J *39/12*
U.S. Cl. 250—210 **9 Claims**



1. A highway line detector comprising:

photoresponsive means, having a pair of electrical terminals and adapted to be mounted on a side region of the underside of a motor vehicle, for varying electrical impedance between said terminals as a function of the magnitude of light reflected off of the pavement of a highway;

a source of electrical bias;

an electrical bridge comprising:

first and second input terminals and first and second output terminals,

first, second, third, and fourth impedance elements, each impedance element being connected between a separate combination of an input terminal and output terminal, and said source of bias being connected across said input terminals,

said photoresponsive means comprising said first impedance element, and

signal responsive impedance means, comprising one of the three other impedance elements, and responsive to an applied signal, for varying its impedance;

integrating means responsive to signal across said output terminals for applying signals to said signal responsive impedance means, and therefrom varying the impedance of said signal responsive means in a direction, whereby said bridge is balanced for conditions of ambient light; and

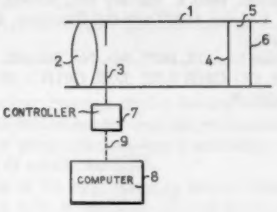
alarm means responsive to a discrete signal change across said output terminals of said bridge for providing an alarm.

4,143,265

ARRANGEMENT FOR THE VISUAL EVALUATION OF PHOTOGRAPHIC THEMES AND FOR DETERMINING THE NECESSARY EXPOSURES

Herbert Krappatsch, Erlangen, Fed. Rep. of Germany, assignor to Gossen GmbH, Erlangen, Fed. Rep. of Germany

Filed Jul. 11, 1977, Ser. No. 814,442
Claims priority, application Fed. Rep. of Germany, Sep. 24, 1976, 2642975
Int. Cl.[2] H01J *31/50*
U.S. Cl. 250—213 R **8 Claims**



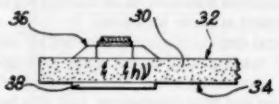
1. An arrangement for determining exposure parameters to obtain correct exposure of a film while photographing an object, comprising: a lens producing a primary image of the object; an electronic image converter for converting the primary image into a secondary image, said converter having contrast range and gamma value corresponding to the film; and light attenuation means for influencing the brightness of the primary image and having a final control element with a calibrated scale for displaying the exposure parameters on said calibrated scale.

4,143,266

METHOD AND DEVICE FOR DETECTING RADIATONS

Joseph Borel, Echirolles, and Vincent Le Goascoz, Claix, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Continuation of Ser. No. 611,851, Sep. 10, 1975, abandoned. This application Apr. 26, 1978, Ser. No. 900,088
Int. Cl.[2] H01J *39/12*
U.S. Cl. 250—211 J **5 Claims**



1. A method for detecting radiation comprising the steps of:

selecting a transistor of the MOS type having a drain region and a source region separated from each other by a bulk region of opposite doping type relative to said drain region and said source region, said bulk region being covered at least in part by an insulated gate electrode extending generally between said drain and source regions;

applying voltages between said drain and said source regions respectively and between said gate electrode and said source region respectively, said voltages creating within said bulk region a channel region through which a drain-source current flows, and creating a carrier collection region located outside of said channel region, said carrier collection region including a space charge region sur-

rounded by a carrier diffusion zone wherein carriers within said diffusion zone are capable of returning to said space charge region by diffusion;

delivering radiation to be detected substantially into said carrier collection region to create pairs of electron-holes, wherein a current Iph is produced in said carrier collection region;

maintaining said bulk region at a floating potential, wherein said current Iph produces a polarization between said bulk region and said source region, said polarization producing variations of said drain source current, said variation being a function of the magnitude of said delivered raditation; and

collecting said drain-source current.

4,143,267

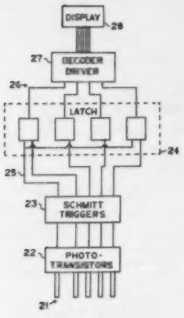
DIGITAL DISTANCE MEASURING INSTRUMENT

Lonnie G. Johnson, 1463 E. Barkley Dr., Mobile, Ala. 36606, and John M. Lederer, 1603 Calle Del Ranchero, Albuquerque, N. Mex. 87106

Filed Dec. 23, 1977, Ser. No. 863,685

Int. Cl.[2] G01B *3/02, 3/38;* G01D *5/30*

U.S. Cl. 250—231 R **6 Claims**



1. An improved device for providing a digital readout of distance measurements, said device comprising:

a. a first member, a second member and a coded scale, said coded scale being fixed to said first member, said second member being moveably coupled to said first member in a manner which facilitates the measurement of distance by said device by positioning said second member at a location on said coded scale corresponding to the magnitude of the distance being measured, said coded scale exhibiting a one to one correspondence with discrete distance magnitudes, discrete locations on said coded scale and the coded information at those locations;

b. an optical detection system attached to said second member for reading said coded scale, said optical detection system comprising a lens, and a plurality of light conducting fibers and phototransistors, said lens being focused on said coded scale so that it magnifies the image of the code at the location of said coded scale with which said second member is aligned, the alignment of said second member corresponding to the alignment of said lens, said light conducting fibers being positioned for optically coupling the image magnified by said lens to said phototransistors, said phototransistors being operative for converting the image magnified by said lens into electrical signals;

c. a signal conditioning circuit connected to said phototransistors, said signal conditioning circuit receiving electrical signals from said phototransistors and generating conditioned, electrical signals in response thereto;

d. a latching circuit, said latching circuit receiving electrical signals being output from said signal conditioning circuit by means of electrical connections, said latching circuit synchronizing the loading of information into its output with correct alignment of said optical detection system with a row of code being read and holding the information last read when alignment is off;

e. a decoder and a digital display, said decoder being connected to said latching circuit and interpreting the information being output therefrom and supplying driving signals by means of electrical connections to said digital display for digital readout of information representative of that read from said coded scale;

f. said device incorporating integrated circuits in order to form a compact unit having all associated electrical circuitry physically located inside said device and having said digital display physically attached to said device.

4,143,268

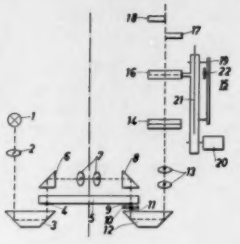
ARRANGEMENT FOR MEASURING ANGLES

Thomas Marold, and Wieland Feist, both of Jena, Fed. Rep. of Germany, assignors to Jenoptik Jena G.m.b.H. Jena, Jena, Fed. Rep. of Germany

Filed Dec. 12, 1977, Ser. No. 857,625

Int. Cl.[2] G01D *5/34*

U.S. Cl. 250—231 SE **3 Claims**



1. An optical arrangement for measuring angles, comprising

a graduated circle with at least one reading position,

a light source for illuminating said reading position,

an optical imaging system,

an index mark,

said reading position and said index mark being arranged in the object plane of said imaging system,

an optical micrometer including optical wedges, at least one of said wedges being adjustable,

means for displacing the one wedge, and

means for measuring the displacement of said one wedge,

a first and a second light-electric detector being arranged in the image plane of said imaging system,

the first light-electric detector scanning the image of said reading position,

the second light-electric detector scanning the image of said index mark;

said light source, said reading position,

said index mark, said imaging system, said optical micrometer and the light-electric detectors being in optical alignment.

4,143,269

FERROELECTRIC IMAGING SYSTEM

Kent McCormack, Richardson, and Dane A. McNeill, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 19, 1977, Ser. No. 861,754

Int. Cl.[2] G01J *1/00;* H01J *31/49*

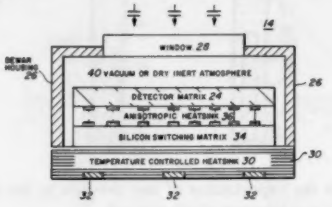
U.S. Cl. 250—352 **11 Claims**

1. An improved ferroelectric imaging system having a ferroelectric detector structure comprising:

(a) a housing;

(b) a temperature controlled heat sink mounted in one end of the housing;

(c) a solid state switching matrix mounted in the housing on the temperature controlled heat sink;
(d) an anisotropic heat sink mounted in the housing in electrical communication with the switching matrix;
(e) a ferroelectric detector matrix mounted in the housing on the anisotropic heat sink, said ferroelectric detector matrix in electrical communication with the anisotropic heat sink; and



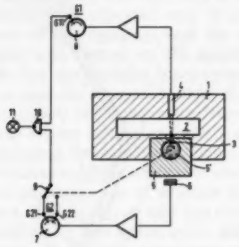
(f) a window mounted in the end of the housing opposite the temperature controlled heat sink and in optical alignment with the ferroelectric detector matrix, said ferroelectric detector matrix operative at its Curie temperature in response to the temperature controlled heat sink impinging infrared energy, bias source, said solid state switching matrix to produce electrical signals representative of the impinging infrared energy.

4,143,270

DEVICE FOR MONITORING A RADIOACTIVE FILLING LEVEL MEASURING INSTALLATION

Gerald Koschek, Waldbronn, Fed. Rep. of Germany, assignor to Seimens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed May 20, 1977, Ser. No. 798,945
Claims priority, application Fed. Rep. of Germany, Jun. 1, 1976, 2624575
Int. Cl.[2] G01F *23/00*
U.S. Cl. 250—357 **2 Claims**



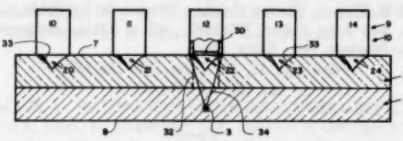
1. A device for monitoring a radioactive filling level measuring installation, in which the radioactive radiator can be rotated within a lead shield from a peripheral operating position opposite a first measuring receiver into a central safety position, comprising:
(a) a second measuring receiver arranged in such a manner that its distance from the radiator is smaller in the safety position than in the operating position,
(b) a first limit control device having limits which are below the signal minima with the radiator in the operating position and with the radiator in the safety position having as an input the output signal of the first measuring receiver, and
(c) a second limit control device having as an input the output signal of the second measuring receiver having a limit below the signal maximum when the radiator is in the safety position, and having a limit below the signal minimum when the radiator is in the operating position, and
(d) a trouble alarm coupled to said first and second limit control devices and responsive if one of said inputs falls outside a corresponding limit value.

4,143,271

NUCLEAR IMAGING DEVICE WITH IMPROVED LINEARITY

Yitzhak Klein, Kiryat Yam, Haifa, and Dan Inbar, Haifa, both of Israel, assignors to Elscint Ltd., Haifa, Israel

Filed Sep. 14, 1976, Ser. No. 723,432
Claims priority, application Israel, Sep. 17, 1975, 48112
Int. Cl.[2] G01T *1/20*
U.S. Cl. 250—368 **4 Claims**



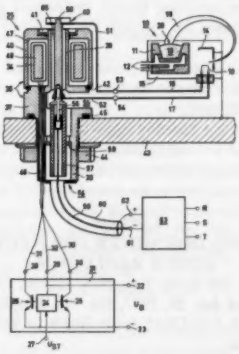
1. In a nuclear imaging device having transparent light coupling means interposed between the photosensitive surfaces of an array of photodetectors and a scintillator crystal, the improvement of which comprises:
(a) a surface in the light coupling means defining a recess associated with at least one photodetector, and located within the volumetric projection of its photosensitive surface; and
(b) a material filling the recess such that the index of refraction throughout the recess is uniform and higher than the index of refraction of the light coupling means;
(c) the recess being closer to the scintillator crystal than the photosensitive surface of said at least one photodetector.

4,143,272

POWER SUPPLY FOR ELECTRON BEAM GUNS

Fritz Frank, Rodenbach, Fed. Rep. of Germany, assignor to Leybold-Heraeus GmbH & Co. KG, Cologne, Fed. Rep. of Germany

Filed Dec. 6, 1977, Ser. No. 857,966
Claims priority, application Fed. Rep. of Germany, Dec. 11, 1976, 2656314
Int. Cl.[2] H01J *27/00*
U.S. Cl. 250—425 **4 Claims**



1. A power supply for the cathode of an electron beam gun disposed in a vacuum chamber to irradiate a vaporizable material, comprising:
a transformer for frequencies above about 20 kHz and having a primary winding and a secondary winding connected to the cathode; means mounting the transformer to

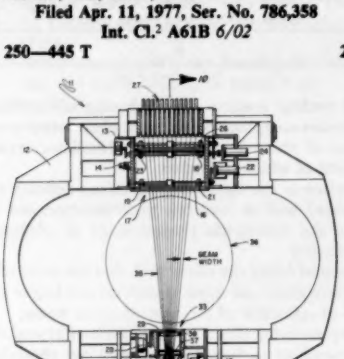
integrate same into the vacuum chamber to dispose the primary winding in communication with the atmosphere and the secondary winding in communication with the vacuum of the vacuum chamber and including a partition disposed between the primary winding and the secondary winding to seal the primary winding from the vacuum and the secondary winding from the atmosphere; and control means receptive of a direct current supply and connected to the primary winding of the transformer and having pulse width controlled transistors for the chopping of the direct current at a frequency above about 20 kHz.

4,143,273

VARIABLE COLLIMATOR

Joseph B. Richey, Shaker Heights; Thomas R. McBride, Chardon, and John Covic, Wickliffe, all of Ohio, assignors to Ohio-Nuclear, Inc., Solon, Ohio

Filed Apr. 11, 1977, Ser. No. 786,358
Int. Cl.[2] A61B *6/02*
U.S. Cl. 250—445 T **26 Claims**



1. In a computerized axial tomographic scanner having a source of radiation, a subject receiving area, radiation detection means, a first collimator means having radiation from said source of radiation passing therethrough, and a second collimator means having radiation from said source of radiation passing therethrough, the improvement comprising:

a first variable aperture means associated with said first collimator means for varying the radiation passing therethrough;

a second variable aperture means associated with said second collimator means for varying the radiation passing therethrough; and

control means for causing said second variable aperture means of said second collimator means to coact with said first variable aperture means of said first collimator means.

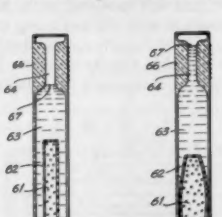
4,143,274

DETECTOR AND DOSIMETER FOR NEUTRONS AND OTHER RADIATION

Robert E. Apfel, 210 Goffe Ter., New Haven, Conn. 06511

Filed Jul. 28, 1977, Ser. No. 820,059
Int. Cl.[2] G01T *1/04*; G01N *21/00*
U.S. Cl. 250—473 **28 Claims**

1. A radiation dosimeter for quantitative detection of radiation and particularly of neutron radiation, comprising a composition including droplets of superheated liquid encapsulated in a host, said host being a member of the group consisting of viscous liquids, greases and soft gels, and means for determining volume change on vaporization of a fraction of said droplets triggered by radiation, said viscous liquid and grease being of high enough viscosity to protect said droplets from initiation of vaporization by contact with a wall, and said gel being soft enough to allow essentially the full volume change corresponding to the vaporization of any droplets at the ambient temperature and pressure about said gel.

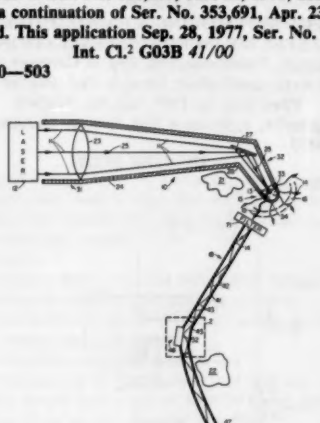


4,143,275

APPLYING RADIATION

Philip J. Mallozzi; Harold M. Epstein; Richard G. Jung; David C. Applebaum; Barry P. Fairand, all of Columbus; William J. Gallagher, Worthington, all of Ohio; Ronald L. Uecker, Wausau, and Myron C. Muckerheide, Schofield, both of Wis., assignors to Battelle Memorial Institute, Columbus, Ohio

Continuation of Ser. No. 650,803, Jan. 20, 1979, abandoned, which is a continuation of Ser. No. 353,691, Apr. 23, 1973, abandoned. This application Sep. 28, 1977, Ser. No. 837,552
Int. Cl.[2] G03B *41/00*
U.S. Cl. 250—503 **8 Claims**



1. Apparatus for applying X-rays at a desired location, comprising

means for positioning a target in a region away from the desired location;

means for directing radiant energy from a laser onto the target to produce X-rays of a selected spectrum and intensity at the target; and

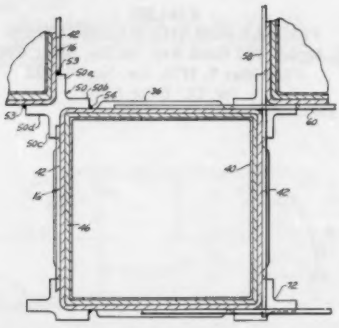
means for channeling the X-rays to the desired location comprising an elongate hollow guide whose inner surface is substantially reflective to X-rays impinging on it at or below the critical angle, wherein the inner surface of the hollow guide is a smooth surface comprising essentially float glass, tungsten, gold, platinum, or similar high-Z material, having a critical angle of at least about 1.5 degrees at 1kev.

4,143,276

SPENT NUCLEAR FUEL STORAGE RACKS

Leslie Mollon, Southfield, Mich., assignor to Brooks & Perkins, Incorporated, Southfield, Mich.

Filed May 9, 1977, Ser. No. 794,955
Int. Cl.[2] G21F 5/00
U.S. Cl. 250—507 3 Claims



1. A storage rack for receiving spent nuclear fuel cells comprising

an egg crate grid formed of a multiplicity of elongated flat strips rigidly interconnected with their long dimensions horizontal and their width dimension vertical, said strips being at right angles to each other defining a multiplicity of square openings spaced apart by the thickness of said strips and forming a checker board pattern consisting of a first parallel series of openings and a second parallel series of openings perpendicular to said first series,

a multiplicity of vertical tubular open-ended modules each of which comprises inner and outer aluminum tubes and neutron absorbing material fitted between said inner and outer tubes, said modules having flat side walls and dimensioned to fit tightly into openings in said grid,

said modules being provided only in alternate openings in each row of grid openings with the modules in one row staggered with respect to the modules in the adjacent rows so that the modules leave open spaces in said grid between modules at opposite sides thereof,

and splines rigidly interconnecting diagonally adjacent modules, said splines having oppositely extending flat offset arms engaging the oppositely facing flat sides of diagonally adjacent modules while providing for lateral spacing between adjacent rows of modules as determined by the thickness of the strips of said egg crate grid, of less than the thickness of said spline arms, said spline arms being metallurgically bonded to the outer walls of said modules.

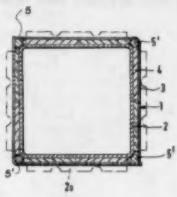
4,143,277

BEARING SUPPORT FOR RECEIVING USED FUEL ELEMENTS OF NUCLEAR POWER STATIONS

Friedrich Krieger, Würzburg, Fed. Rep. of Germany, assignor to Firma GG. Noell GmbH, Fed. Rep. of Germany

Filed Aug. 8, 1977, Ser. No. 822,922
Int. Cl.[2] G21F 5/00
U.S. Cl. 250—507 10 Claims

1. A bearing support for receiving used fuel elements of nuclear power stations, comprising a plurality of chambers having a square cross-section and spaced apart inner and outer walls, screening plate means for screening the radiating fuel elements disposed between said walls, a plurality of foot plates adjacent the bottom of said chambers, a plurality of spacer elements adjacent the tops of said chambers, each chamber being detachably secured at its underside to a common foot plate and held in position at its upper side by spacer elements, said outer wall comprising two equal-sided angle sheets, said inner wall comprising a closed square tube, the wall thickness of said outer wall being smaller than that of said inner wall and a plurality of interengaged transverse and longitudinal bar



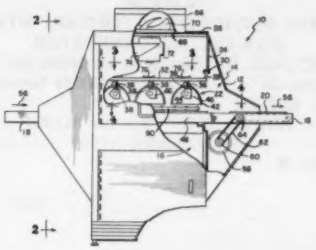
grates connected to said inner walls, said inner walls of said chambers being held in spaced relationship to each other at their upper sides by at least one of said bar grates.

4,143,278

RADIATION CURE REACTOR

Robert L. Koch, II, Evansville, Ind., assignor to Geo. Koch Sons, Inc., Evansville, Ind.

Filed May 16, 1977, Ser. No. 796,855
Int. Cl.[2] B01K 1/00; F26B 3/34
U.S. Cl. 250—527 25 Claims



1. In a radiation reactor, a radiation source comprising a radiation producing device for establishing a projection field of radiation; conveyor means for positioning work to be cured within said field; conduit means interposed in said field between and in spaced relation to said radiation source and said conveyor means to block at least a portion of said field; said conduit means carrying a cooling fluid for absorbing heat generated by said radiation source; and means for adjusting the spacing between said conduit means and said conveyor means.

4,143,279

METHOD AND APPARATUS FOR TESTING THE PRINT QUALITY OF PRINTED TEXTS, MORE PARTICULARLY BANKNOTES

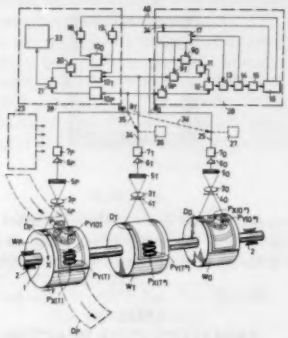
Kurt Ehrat, Steinmaur; Fred Mast, Wil; Ernst Huber, Wettingen, and Josef Huber, Zurich, all of Switzerland, assignors to Gretag Aktiengesellschaft, Regensdorf, Switzerland

Filed Apr. 26, 1977, Ser. No. 791,140
Claims priority, application Switzerland, Apr. 30, 1976, 5450/76; Apr. 30, 1976, 5451/76
Int. Cl.[2] G06K 5/00
U.S. Cl. 250—556 31 Claims

1. A method for testing the print quality of a sample having a printed text, more particularly a bank note, the text content of which is made up of at least two partial text contents originating from different printing processes, comprising:

using a separate original having a partial text content originating from the particular printing process concerned for each printing process, determining the relative positions of the sample in respect of each original, combining the partial text contents of the individual originals in accor-

dance with the partial text contents printed one above the other on the sample to form a total original text content, thereby taking into account said relative positions, comparing the contents of the sample with the total original text content, and assessing the sample by reference to the result of this comparison.

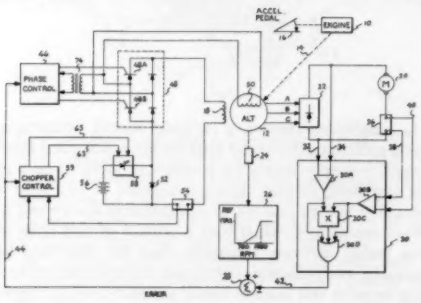


4,143,280

CONTROL SYSTEM FOR A TERTIARY WINDING SELF-EXCITED GENERATOR

Frederick J. Kuehn, Jr.; Joseph A. Laukaitis, and Stuart W. McElhenny, all of Erie, Pa., assignors to General Electric Company, Erie, Pa.

Filed Jul. 1, 1977, Ser. No. 811,921
Int. Cl.[2] B60L *11/06*
U.S. Cl. 290—9 **9 Claims**



1. In a traction vehicle including electric traction motor means for propelling the vehicle, electrical generating means having main windings including a field winding for supplying electrical energy to said motor means, and thermal prime mover means for driving said generating means at a variable speed, an electrical propulsion control system adapted to regulate the electrical output of said generating means, said control system comprising:

(a) an auxiliary winding wound on said generating means for providing additional electrical energy;

(b) first means for interconnecting said auxiliary winding and said field winding, said first means including means for regulating the level of excitation supplied to said field winding from said auxiliary winding;

(c) a controllable secondary source of direct current power;

(d) second means for interconnecting said secondary source in circuit with said field winding for providing continuously controlled additional excitation when the available electrical energy from said auxiliary winding is less than a predetermined magnitude; and

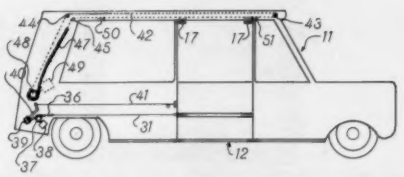
(e) control means for controlling said first and second means such that the excitation supplied to said field winding comprises a first component supplied from said auxiliary winding and a second component supplied from said secondary source, said second component having an average magnitude substantially equal to the difference between the desired magnitude of field excitation and the maximum average magnitude of excitation available from said auxiliary winding.

4,143,281

VEHICLE FOR THE HANDICAPPED

Robert J. Appley, 902 Birch Ave., Shelby, Mont. 59474

Filed May 9, 1977, Ser. No. 794,822
Int. Cl.[2] B60J *1/10*
U.S. Cl. 296—146 **7 Claims**



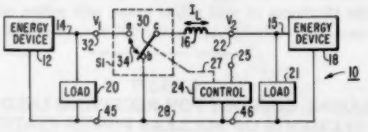
1. A vehicle having a body with a door frame and a door assembly, said door assembly including three movable sections, an upper section horizontally slidable along a side of said vehicle from a position within said door frame to a position outside said door frame; a center section having a longitudinal channel along its top edge to receive the bottom edge of said upper section and the bottom edge of said center section being pivotally connected to the top edge of a lower section; the bottom edge of said lower section being pivotally connected to the bottom of said door frame; biasing means connecting said center section and said lower section adjacent one side edge thereof; flexible connecting means attached adjacent a top corner of said lower section and actuating means operatively connected to said flexible connecting means.

4,143,282

BILATERAL ENERGY TRANSFER APPARATUS

Clement A. Berard, Jr., Trenton, and Jonathan S. Kinsley, Freehold, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Dec. 3, 1976, Ser. No. 747,084
Int. Cl.[2] H02J *1/00*
U.S. Cl. 307—43 **14 Claims**



9. A circuit for transferring energy between first and second terminals comprising, in combination:

a first current path which can be opened or closed connected between said first terminal and a point of reference potential;

a second current path which opens when said first path is closed and vice versa, said second current path being connected between said second terminal and one of (a) said first terminal and (b) said point of reference potential;

an inductor in a current path common to said first and second paths; and

means responsive to a control signal for opening and closing said first current path and for controlling the ratio between the time interval said first current path is closed and

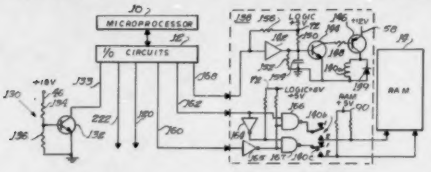
the complete period during which the first current path is both closed and open.

4,143,283

BATTERY BACKUP SYSTEM

Fredy E. Graf, San Diego, and Michael S. Krystek, Spring Valley, both of Calif., assignors to General Atomic Company, San Diego, Calif.

Filed Jan. 17, 1978, Ser. No. 870,113
Int. Cl.[2] H02J *7/00, 9/04;* H02H *3/24*
U.S. Cl. 307—66 **16 Claims**



1. A backup power system for a user operated data processor having a memory for storing information, said processor having a high DC voltage level input requirement for operating the data processor, said memory having a lower DC voltage level input requirement for maintaining the information in the memory, said data processor being powered by DC power converted from AC power when the AC power is present, said system comprising:

a plurality of DC power storage means, each of said storage means supplying power generally at said lower DC voltage level;

means for sensing an AC power failure;

means responsive to said sensing means for operatively connecting said plurality of storage means in parallel so that said plurality of storage means supply power at least at said lower DC voltage level to the memory of said data processor for maintaining the information in the memory;

means for disabling the parallel connecting means and for operatively connecting said plurality of storage means in series so that said plurality of storage means supply DC power at least at said high DC voltage level to the data processor to thereby permit the user to operate the data processor and at least retrieve information stored in the memory;

means for disabling the series connecting means and enabling said parallel connecting means so that the DC voltage level supplied by said plurality of storage means can be reduced to said lower DC voltage level.

4,143,284

ARRANGEMENT FOR SUPPLYING I^2L CIRCUITS WITH DIFFERING CURRENTS

Ruediger Mueller, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 26, 1977, Ser. No. 800,633
Claims priority, application Fed. Rep. of Germany, Jun. 1, 1976, 2624584
Int. Cl.[2] H03K *19/08;* H01L *27/12;* H03K *19/22*
U.S. Cl. 307—213 **7 Claims**

1. An arrangement for supplying integrated injection logic (I^2L) circuits with differing currents, comprising:

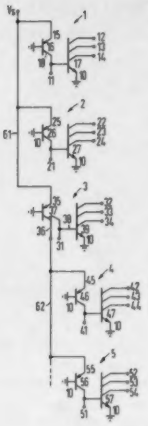
a first plurality of I^2L circuits to be supplied with a first current, each I^2L circuit having a lateral transistor with an injector;

a first injector path connecting injectors of the first plurality of I^2L circuits;

a second plurality of I^2L circuits to be supplied with a second current different from said first current, each I^2L circuit of said second plurality having a lateral transistor with an injector;

a second injector path connecting injectors of the second plurality of I^2L circuits;

an external voltage source connected to the first injector path; and



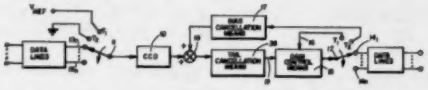
a current hogging, injection logic (CHIL) arrangement having a lateral transistor with an injecting emitter, a control collector, and an output collector, said first injector path connecting to the injecting emitter and said second injector path connecting to the control collector.

4,143,285

DATA SMEAR COMPENSATION IN CHARGE-TRANSFER-DEVICE ANALOG SHIFT REGISTERS

Stanley A. White, Yorba Linda, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Oct. 1, 1976, Ser. No. 728,690
Int. Cl.[2] G11C *19/28*
U.S. Cl. 307—221 D **14 Claims**



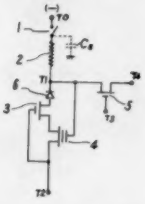
1. A device for the correction of signal tail distortion occurring in an analog sampling shift register and comprising one of a recursive and transversal type filter having a gain control input responsive to an output of said shift register during the response thereof to an applied null input, said filter further having an input means responsive to said output of said shift register for preselective shaping of said shift register output response to compensate for tail-end data smear of signal samples sampled by said shift register.

4,143,286

SEMICONDUCTOR MEMORY DEVICE

Susumu Koike, Ibaraki, and Gota Kano, Nagaoka-Kyo, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jun. 6, 1977, Ser. No. 803,991
Claims priority, application Japan, Jun. 16, 1976, 51-71508
Int. Cl.[2] G11C *11/40*
U.S. Cl. 307—238 7 Claims



1. A semiconductor memory device including on a monolithic substrate

a negative resistance device which comprises a series connected complementary pair of field-effect transistors of opposite conductivity types to each other, both to operate in depletion mode, at least one of said field effect transistors being an insulated gate type field effect transistor having at least one insulation film under a gate electrode which insulation film stores electric charges therein thereby making said insulated gate type field-effect transistor in depletion mode thereby giving said negative resistance device a nonvolatile memory function, each of said field-effect transistors including source, gate and drain regions and in said series connected complementary pair both field-effect transistors being connected with each other by the source region of a first field-effect transistor connected to the source region of a second field-effect transistor, by the drain region of said first field-effect transistor connected to a first terminal, by the drain region of said second field-effect transistor connected to a second terminal, by the gate region of said second field-effect transistor connected to said first terminal and by the gate region of said first field-effect transistor connected to said second terminal, characterized in that

said first terminal is connected through a built-in load resistor to a third terminal and

a gating means for operating writing-in and reading out of the contents of the memory is connected to said first terminal.

4,143,287

PHOTO COUPLING LINE ISOLATION CIRCUIT

Ronald D. Biggs, Zionsville, Ind., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 19, 1977, Ser. No. 834,117
Int. Cl.[2] H03K *17/00*
U.S. Cl. 307—311 8 Claims

1. A photo coupling line isolation circuit comprising:

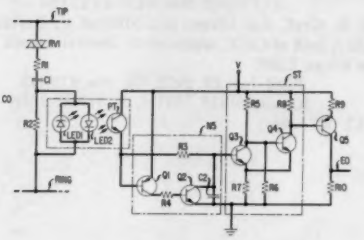
a signal input circuit including an LED that generates optical signals responsive to the application of electrical signals to the input circuit,

a signal output circuit electrically isolated from the input circuit including a phototransistor that generates electrical signals responsive to the optical signals of the LED, noise suppression circuitry comprising capacitor means connected to the phototransistor, and a Schmitt trigger circuit for providing an output

characterized in that

the noise suppression circuitry is connected to the output of the phototransistor and activated by the turning on of the phototransistor,

the noise suppression circuitry includes a switch portion that is connected in parallel with the capacitor means and is closed whenever the phototransistor is off whereby the capacitor means is discharged, the switch being opened responsive to the turning on of the phototransistor, and



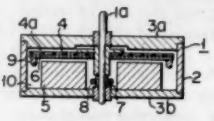
the Schmitt trigger circuit is connected to the output of the noise suppression circuitry.

4,143,288

CORELESS MOTOR

Masaaki Sato, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Division of Ser. No. 595,398, Jul. 14, 1975, Pat. No. 3,993,920.
This application Oct. 12, 1976, Ser. No. 731,719
Claims priority, application Japan, Jul. 13, 1974, 49-83083; Jul. 18, 1974, 49-85239; Jul. 18, 1974, 49-85240; Jul. 31, 1974, 49-91510; Dec. 24, 1974, 49-3291
The portion of the term of this patent subsequent to Nov. 23, 1993, has been disclaimed.
Int. Cl.[2] H02K *7/04*
U.S. Cl. 310—66 18 Claims



1. A coreless motor comprising:

a motor housing having a bearing,

a rotor mounted within the housing and rotatably supported within the bearing, said rotor having a plurality of coil units attached on a rotor substrate, said plurality of coil units comprising a pancake coil,

a permanent magnet stator mounted within the housing and disposed opposite to the rotor, said stator being arranged opposite to an effective coil section of said pancake coil,

an annular spacing within said motor housing formed opposite to an outer peripheral portion other than said effective coil section of said rotor, and a rotor balance adjusting member provided on that outer peripheral portion of said rotor which confronts said annular spacing within said housing.

4,143,289

ROTATIONAL FIELD SENSOR

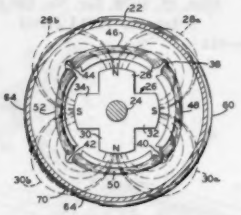
Don W. Williams, Van Wert, Ohio, assignor to Progressive Electronics, Inc., Fort Wayne, Ind.

Filed Dec. 14, 1976, Ser. No. 750,529
Int. Cl.[2] H02A *21/14*
U.S. Cl. 310—156 8 Claims

1. Apparatus for sensing the rotation of a rotating field comprising first means for sensing the rotation of the field of a plurality of arcuately spaced magnetic poles mounted for rotation about an axis and for producing a signal upon a predetermined rotational movement of said field;

second means for locating and supporting said first means in said field to provide relative movement between said first means and said field as said field rotates;

said first means comprises a coil having first and second terminals; said second means supporting said coil in said field so that said coil is traversed by said field as said field



rotates thereby producing a signal at said terminals corresponding to traversal of said coil by said field;

said first means further comprises a magnetic strip; said coil being wound on said strip; said strip being flexible and formable in a curvilinear configuration; said second means supporting said strip with a radius of curvature substantially coaxial with said field axis and within said field.

4,143,290

SUPPORTING DEVICE FOR ROTOR WINDING IN ROTARY ELECTRIC MACHINE

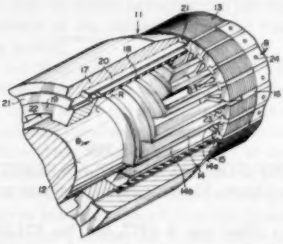
Satoshi Mizukami; Etsuhiko Shoyama; Kenji Matsunobu; Masatosi Taniguchi; Kuniyoshi Konno, and Katunori Kimura, all of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

Filed Sep. 13, 1976, Ser. No. 722,422

Claims priority, application Japan, Mar. 5, 1975, 50-25997

Int. Cl.[2] H02K *3/46*

U.S. Cl. 310—270 **7 Claims**



1. A rotor for use in a rotary electric machine, comprising:

a rotary shaft;

a core secured on said rotary shaft;

windings wound around said core and having end portions thereof protruded from the axial ends of said core, respectively;

retaining rings fixedly mounted on said rotary shaft in concentric relation to said shaft and extending around the peripheral surfaces of said protruded end portions of said windings respectively for preventing said protruding end portions of said windings from being radially outwardly moved during the rotation of said rotary shaft, each of said retaining rings defining an annular space between its inner peripheral surface and the outer peripheral surface of said rotary shaft, in which cooling gas is introduced in said annular spaces; and

shielding layers each positioned between the inner peripheral surface of each of said retaining rings and the outer peripheral surface of each of said protruded end portions of said windings, for preventing cooling gas from being in contact with the inner peripheral surfaces of said retaining rings, said shielding layers being in intimate contact with the inner peripheral surfaces of said retaining rings, respectively, and said shielding layers being films of varnish coated on the inner peripheral surfaces of said retaining rings, respectively.

4,143,291

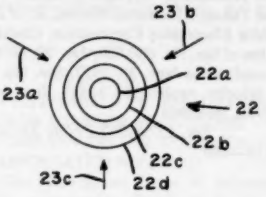
DYNODE FOR A PHOTOMULTIPLIER TUBE

John J. Morales, Huntington, Conn., assignor to S.R.C. Laboratories, Inc., Fairfield, Conn.

Continuation-in-part of Ser. No. 679,339, Apr. 22, 1976, which is a continuation-in-part of Ser. No. 544,016, Jan. 24, 1975, Pat. No. 3,959,680. This application Jan. 24, 1977, Ser. No. 761,911

Int. Cl.[2] H01J *43/10*

U.S. Cl. 313—103 R **14 Claims**



10. A dynode for use as an electron multiplier stage comprising at least three different size frustums of cones formed of thin metal, means mounting the frustums to be concentric about an axis with their upper and lower edges being in first and second planes and including means electrically interconnecting each frustums to have all the frustums be at the same electrical potential and means forming an electron emissive surface on the frustums.

4,143,292

FIELD EMISSION CATHODE OF GLASSY CARBON AND METHOD OF PREPARATION

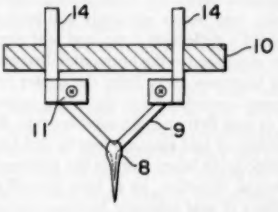
Shigeyuki Hosoki, Hachioji, and Hiroshi Okano, Tokyo, both of Japan, assignors to Hitachi, Ltd., Japan

Filed Jun. 25, 1976, Ser. No. 700,024

Claims priority, application Japan, Jun. 27, 1975, 50-79403; Mar. 24, 1976, 51-31248; Apr. 2, 1976, 51-36033

Int. Cl.[2] H01J *1/16, 19/10*

U.S. Cl. 313—336 **30 Claims**



1. A field emission cathode comprising a cathode base and a needle-shaped cathode composed of glassy carbon, said needle-shaped cathode having an equivalent radius of 1000 to 3000 Å.

6. A method for the preparation of a needle-shaped cathode of a field emission cathode comprising the steps of shaping a glassy carbon raw material into a form of a needle-shaped cathode, curing the shaped glassy carbon raw material, hardening and carbonizing the cured and shaped glassy carbon raw material at a high temperature in an atmosphere selected from a vacuum atmosphere and an inert gas atmosphere to thereby convert the glassy carbon raw material to glassy carbon, and

etching the tip of the resulting glassy carbon needle-shaped cathode to form an equivalent radius of 1000 to 3000 Å.

4,143,293

IN LINE ELECTRON GUNS FOR COLOR TUBES, EACH HAVING A CONTROL GRID WITH VERTICALLY ELLIPTICAL APERTURE

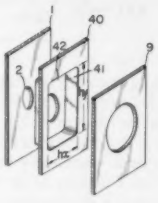
Kakuichiro Hosokoshi, Neyagawa; Hiroto Nakamura, Takatsuki, and Takami Okamoto, Mukou, all of Japan, assignors to Matsushita Electronics Corporation, Osaka, Japan

Continuation of Ser. No. 650,620, Jan. 20, 1976, abandoned. This application Nov. 30, 1977, Ser. No. 856,085

Claims priority, application Japan, Jan. 24, 1975, 50-10772; Jan. 31, 1975, 50-13903

Int. Cl.[2] H01J *29/50, 29/56*

U.S. Cl. 313—409 **1 Claim**



1. In a color cathode-ray television tube comprising a screen, three in-line electron guns for generating and directing three corresponding electron beams along paths lying in a common horizontal plane to said screen, each electron gun including (i) a control grid having an elliptical aperture with a vertically oriented major axis for predistorting the corresponding electron beam, (ii) a first apertured electrode and an adjacent second apertured electrode between said control grid and said screen, said electrodes comprising an electron lens, and (iii) magnetic deflection means between said electrodes and said screen, wherein said beams are subjected to vertical and horizontal magnetic deflection fields during operation of said tube for scanning said beams vertically and horizontally over said screen within a deflection zone, and said electron beams tend to become elongated in the horizontal direction as their deflection angle increases away from the center of said screen, the improvement comprising lens distorting means integral with at least one of said first and second electrodes for modifying the characteristics of said electron lens so that said lens converges said corresponding beam more in the horizontal direction than in the vertical direction, to at least partially compensate for said tendency of said beams to become horizontally elongated and to render said beams more nearly circular over a substantial area of said screen, with said beams being of vertically elongated elliptical shape at the center of the screen and of horizontally elongated elliptical shape at the center of each horizontal and vertical edge of the screen, said first electrode being disposed between said control grid and said second electrode, said first electrode having a conductive substantially rectangularly recessed portion, the vertical dimension of said portion being greater than the horizontal dimension thereof, said portion defining an action space, with the bottom wall of said recessed portion being adjacent said control grid, a first hole in said bottom wall through which said electron beam may pass.

4,143,294

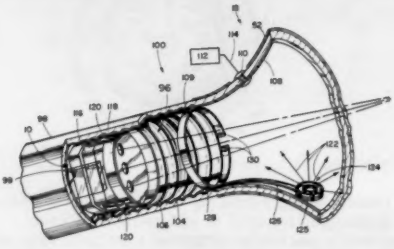
GETTER SUPPORT MEANS FOR TELEVISION CATHODE RAY TUBES

Philip C. Miller, Northbrook, and Michael W. Retsky, Chicago, both of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

Division of Ser. No. 708,817, Jul. 26, 1976. This application Mar. 15, 1978, Ser. No. 886,859

Int. Cl.[2] H01J *29/64*

U.S. Cl. 313—481 **8 Claims**



1. Getter support means for a television cathode ray tube including a funnel and a neck, said getter support means comprising an expansible member, the circumference of which while relaxed is greater than the circumference of the inner surface of the neck of the recipient tube, said expansible member being structured so as to be retained in the tube by the outward, self-retaining pressure of said member on said inner surface of said neck adjacent to the junction of said neck and said funnel, said expansible member providing for the support of getter means by attachment of said getter means to said member.

4,143,295

CATHODE STRUCTURE FOR AN ELECTRON TUBE

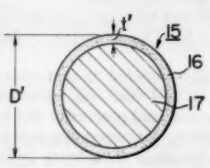
Tomokatsu Oguro, Mobara, Japan, assignor to Hitachi, Ltd., Japan

Filed Aug. 3, 1977, Ser. No. 821,338

Claims priority, application Japan, Aug. 9, 1976, 51-94016

Int. Cl.[2] H01J *1/14, 19/06;* H01K *1/04*

U.S. Cl. 313—346 R **2 Claims**

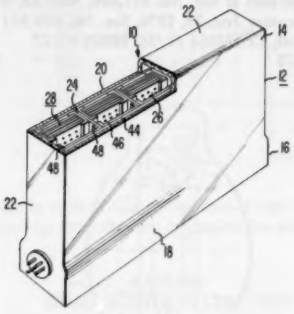


1. A cathode structure for an electron tube comprising a filament unit and support means for supporting said filament unit, said filament unit including a thoriated tungsten wire having a tungsten carbide layer constituting a surface portion of said wire, the thickness of said carbide layer being almost uniform about the axis of said wire, in which the thickness of said tungsten cabide layer is about 5–30 μ and the diameter of said wire including said carbide layer is about 0.6–0.8 mm.

4,143,296
FLAT PANEL DISPLAY DEVICE

Thomas O. Stanley, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 6, 1977, Ser. No. 804,007
Int. Cl.[2] H01J 29/70, 29/80
U.S. Cl. 313—422 2 Claims



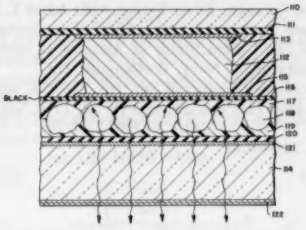
1. A display device comprising:
an evacuated envelope having front and back walls;
a plurality of spaced support walls extending between and substantially perpendicular to said front and back walls forming parallel channels extending along said front and back walls;
means for generating electrons and directing the electrons into said channels as a plurality of beams, along a plurality of beam paths;
a phosphor screen extending across each of said channels;
a beam focusing guide extending along the inner surface of the back wall along each of the beam paths for confining the electrons in said beams and for selectively deflecting said beams toward said screen, said beam focusing guides closest to said support walls being spaced from the support walls so that the beams extend across less than the full lateral dimension of the channels when the beams leave the focusing guides;
a separate fan out electrode at each side of each channel for creating a static electrostatic field which causes at least some of the beams to fan out and extend across the entire lateral dimension of the channels at the phosphor screen as the beams flow from the focusing guides to the screen, said fan out electrodes being on the surface of said support walls, each of said fan out electrodes extending from the phosphor screen but being spaced from the focusing guide and being electrically connected to said screen by a metal film electrode on and covering the phosphor screen and the fan out electrode.

4,143,297
INFORMATION DISPLAY PANEL WITH ZINC SULFIDE POWDER ELECTROLUMINESCENT LAYERS

A. G. Fischer, Dortmund, Fed. Rep. of Germany, assignor to Brown, Boveri & Cie Aktiengesellschaft, Mannheim, Fed. Rep. of Germany

Filed Aug. 19, 1976, Ser. No. 715,715
Claims priority, application Fed. Rep. of Germany, Mar. 8, 1976, 2609460
Int. Cl.[2] H05B 33/14, 33/20, 33/26
U.S. Cl. 313—502 7 Claims

5. An electroluminescent display panel comprising a transparent front electrode, a transparent insulating film, an insulating resin body having a layer of electroluminescent particles centrally embedded therein with a thickness of one particle, a black insulating film, and a plurality of opaque back electrodes, said insulating films being applied as a coating on front and back surfaces of said resin body respectively and said front and back electrodes being disposed directly on the respective insulating films to form a symmetrical multi-layer structure, and

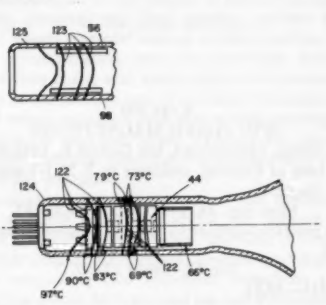


means for selectively electrically energizing the back electrodes.

4,143,298
TELEVISION CATHODE RAY TUBE HAVING A VOLTAGE DIVIDER PROVIDING TEMPERATURE-INVARIANT VOLTAGE AND ASSOCIATED METHOD

Valentijn B. Bing, Des Plaines, and James W. Schwartz, Deerfield, both of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

Filed Sep. 1, 1977, Ser. No. 829,765
Int. Cl.[2] H01J 29/96
U.S. Cl. 315—3 6 Claims



1. In a television cathode ray tube comprising an evacuated envelope including a faceplate and a funnel having on an internal surface thereof an inner conductive coating for receiving a relatively high anode voltage, said tube also having a low-voltage terminal for receiving a relatively low voltage through a base of the tube, said tube being subject to internal spatial temperature patterns fixed or varying with time which are incidental to tube warm-up and operation, and having "N" electrodes therein requiring "N" different temperature-invariant voltages intermediate to said relatively high and relatively low voltages, an improved voltage divider means for producing said N temperature-invariant voltages, comprising N + 1 discrete resistive sections having like temperature coefficients and having resistance values of the same order of magnitude, with N taps to provide said N temperature-invariant intermediate voltages to said electrodes requiring such voltages, with each of said resistive sections being so positioned and arranged relative to said temperature patterns as to have similar spatial average temperature experiences, and connecting means for series-connecting said resistive sections between said inner conductive coating and said low voltage terminal, whereby due to the similarity of spatial average temperature experiences of said resistive sections, the ratio of the resistance values of said resistive sections and thus the ratio of voltage drops thereacross does not change despite variations in said temperature patterns.

4,143,299

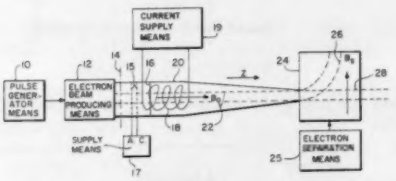
CHARGED-PARTICLE BEAM ACCELERATION IN A CONVERGING WAVEGUIDE

Phillip A. Sprangle, Silver Spring, Md.; Adam T. Drobot, Burke, Va., and Wallace M. Manheimer, Silver Spring, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 724,053, Sep. 16, 1976, abandoned. This application Feb. 22, 1978, Ser. No. 881,463

Int. Cl.[2] H01J *25/10*

U.S. Cl. 315—5.41 21 Claims



1. In an apparatus for producing a relativistic collective ion-electron particle beam having a negative energy space-charge propagating therealong in the direction of flow of the beam, means for accelerating the particles comprising a waveguide through which said beam is propagated, said waveguide having a gradually decreasing cross-sectional area taken transversely to the direction of propagation of the beam.

4,143,300

SPIN TUNED MAGNETRONS

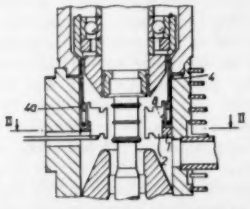
Alan B. Cutting, Maidenhead, and Donald E. Tyzack, Gerrards Cross, both of England, assignors to E M I-Varian Limited, Hayes, England

Filed Sep. 14, 1977, Ser. No. 833,187

Claims priority, application United Kingdom, Sep. 16, 1976, 38329/76

Int. Cl.[2] H01J *25/50*

U.S. Cl. 315—39.61 6 Claims



1. A magnetron, including an anode structure comprising: an annular member; a plurality of vanes, formed of an electrically conductive material, supported by said annular member to be disposed substantially parallel to the axis of the annular member and protruding radially therefrom; a substantially cylindrical sleeve member disposed coaxially with said annular member, so that the vanes and the sleeve member overlap over at least part of their respective axial lengths, and rotatable about said axis relative to said vanes; and a plurality of apertures formed in the part of the sleeve member which overlaps said vanes to cooperate therewith to determine the frequency to which the magnetron is tuned and to vary said frequency during rotation of the sleeve member, wherein at least one of said vanes differs in shape from the other vanes and at least one of said apertures differs in shape from the other apertures.

4,143,301

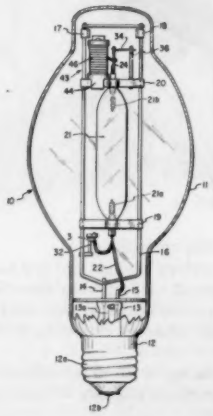
HIGH INTENSITY DISCHARGE LAMP WITH INTEGRAL MEANS FOR ARC EXTINGUISHING

Herbert S. Strauss, Paramus, and Lawrence Sheinberg, Howell Township, Monmouth County, both of N.J., assignors to Duro-Test Corporation, North Bergen, N.J.

Continuation-in-part of Ser. No. 577,096, May 13, 1975. This application Jun. 25, 1976, Ser. No. 699,952

Int. Cl.[2] H01J *61/56;* H05B *41/22*

U.S. Cl. 315—73 18 Claims



11. An electric lamp comprising

an outer envelope of material which is transmissive to visible light and which is normally sealed to the atmosphere,

arc tube discharge means within said outer envelope for producing a predetermined radiation spectrum of energy upon electrical current being supplied thereto, said outer envelope blocking at least a portion of the radiation spectrum produced by said arc tube discharge means,

means for supplying electrical current to said arc tube discharge means to produce the arc therein, said current supplying means including pneumatic pressure sensitive switch means located within said outer envelope electrically connected in series with said arc tube discharge means, said pressure switch means being normally closed when the outer envelope is intact and responding to a change in gas pressure to open when said outer envelope is broken.

4,143,302

ENERGIZING CIRCUIT FOR A FLUORESCENT LAMP

Ernst Wiesner, Dornbirn, Austria, assignor to Zumtobel Aktiengesellschaft, Dornbirn, Austria

Filed Apr. 29, 1977, Ser. No. 792,215

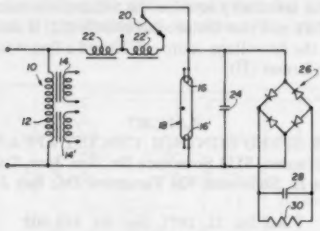
Claims priority, application Austria, Apr. 30, 1976, 3213/76

Int. Cl.[2] H05B *41/16*

U.S. Cl. 315—205 6 Claims

1. In a system having a source of AC voltage, a gas discharge lamp for emitting light substantially continuously during an operating time thereof, said gas discharge lamp having a first and a second electrode, and main energizing means for connecting said gas discharge lamp to said source of AC voltage at a starting instant, said main energizing means having a voltage spike creating means for creating a voltage spike for firing said lamp in each cycle of said AC voltage during said operating time and for a start-up time starting at said starting instant and continuing to the start of said operating time, the improvement

comprising damping means connected to said main energizing means for decreasing the amplitude and increasing the duration



of said spike in each of said cycles during said operating time and said start-up time, thereby increasing the life of said lamp.

4,143,303

SPARK IGNITION CIRCUITS

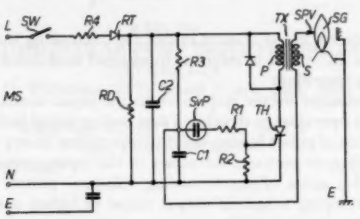
Arthur R. Goble, and Michael H. J. Webb, both of Fareham, England, assignors to Plessey Handel und Investments AG, Zug, Switzerland

Filed Apr. 8, 1977, Ser. No. 785,824

Claims priority, application United Kingdom, Apr. 9, 1976, 14670/76

Int. Cl.[2] H05B *37/00, 39/00, 41/14*

U.S. Cl. 315—239 **5 Claims**



1. Spark ignition circuit for a gas igniter, comprising: a first capacitor; voltage-supply means for connection to a mains supply for supplying d.c. charging current to this capacitor, said voltage-supply means including rectifier means; a step-up transformer having a primary and a secondary winding; a discharge circuit for said first capacitor, including said primary winding in series with a triggerable switching means; an ignition spark-gap connected across said secondary winding; a timing circuit for the triggering of said switching means, said timing circuit including a second capacitor connected, in series with a timing resistor, across said voltage-supply means, and further including an enclosed arc-discharge device, the voltage across said second capacitor being applied to said triggerable switching means through said enclosed arc-discharge device to trigger said switching means when the striking voltage of said arc-discharge device is reached, said arc-discharge device comprising two electrodes defining a spark gap between them, each electrode being formed from a first portion consisting of a length of metal wire having a melting point temperature of at least 1200° C., coated with barium-strontium carbonate and/or oxide, and a second portion consisting of a length of wire having an expansion coefficient compatible with that of the first portion, said first and second portions being secured together in alignment, the said electrodes being sealed within an evacuated enclosure member in such manner that the first portions of the two electrodes are enclosed by the enclosure member in a spaced apart and overlapping relationship and their second portions are sealed into a wall of the enclosure member and project therefrom, the enclosure member being filled with gas having a Paschen minimum equal to or less than 200 volts.

4,143,304

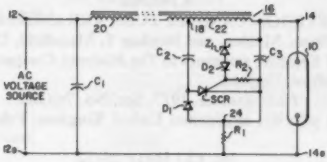
POSITIVE STARTING AND OPERATING APPARATUS FOR HIGH-PRESSURE SODIUM LAMPS

William H. Hitchcock, Columbia Station; Archie R. Cornell, Avon Lake, both of Ohio, and Joseph C. Engel, Monroeville, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 6, 1976, Ser. No. 730,096

Int. Cl.[2] H05B *41/16*

U.S. Cl. 315—276 **3 Claims**



1. A starting and operating apparatus for connection across an AC source for starting and then operating a high-pressure sodium discharge lamp, said apparatus comprising:

(a) input terminals operable to be connected across said AC source, output terminals operable to have said discharge lamp connected thereacross, a ballast inductor having a tap intermediate the ends thereof to define first and second winding portions, said first winding portion having a greater length than said second winding portion and having a transformation ratio therebetween substantially greater than unity, said ballast inductor connected at its ends in series between one of said input terminals and one of said output terminals with said second winding portion connecting to said one output terminal, and the other of said input terminals electrically connected to the other of said output terminals;

(b) capacitive energy storage means and blocking diode means therefor connected across said second winding portion of said ballast inductor, and also in circuit with said other output terminal, said capacitive energy storage means comprising two individual capacitors a first of which is in circuit between said tap and a common electrical point and the second of which is in circuit between said one output terminal and said common electrical point, a charging resistor means connected between said common electrical point and said other output terminal, and said blocking diode means comprising a first blocking diode having its anode connected to said common electrical point and having its cathode connected in circuit with said tap;

(c) gate-controlled solid-state switching means comprising an SCR the anode of which is connected intermediate said first capacitor and said first blocking diode, and the cathode of said SCR is connected in circuit with said common electrical point;

(d) Zener diode means comprising a Zener diode, a bleeder resistor means, and a second blocking diode means, said Zener diode having a predetermined Zener voltage which is greater than the operating voltage for said lamp, but less than the peak voltage of said AC source, said Zener diode and said second blocking diode means connected in series, said bleeder resistor means connected in circuit between the gate and cathode of said SCR, the cathode of said Zener diode connected in circuit with said second winding portion and the anode of said Zener diode connected in circuit with the gate of said SCR, and said second blocking diode means is connected with its anode in circuit with said second winding portion and its cathode in circuit with the gate of said SCR; whereby when said

apparatus is initially energized, both said first and second capacitors are charged through said charging resistor means, and when said second capacitor charges to a voltage which exceeds said Zener voltage of said Zener diode said SCR is gated thereby causing both said first and second capacitors to discharge through said second winding portion to cause the autotransformer action thereof to apply a voltage pulse of sufficient magnitude across said output terminals to start said lamp connected thereacross, and after said lamp is started, the Zener voltage of said Zener diode is not exceeded, thereby rendering the lamp starting portion of said apparatus inoperative.

4,143,305

TELEVISION CAMERA TUBE ARRANGEMENTS

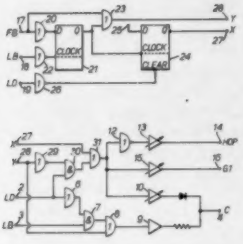
Ian E. Gibson, Maldon, and Stephen T. Mansfield, Chelmsford, both of England, assignors to The Marconi Company Limited, Chelmsford, England

Filed Jan. 28, 1977, Ser. No. 763,621

Claims priority, application United Kingdom, Feb. 24, 1976, 7308/76

Int. Cl.[2] H01J *29/52*

U.S. Cl. 315—379 **14 Claims**



1. An H.O.P. or A.C.T. television camera tube arrangement wherein in addition to the beam being arranged to discharge overloads in the target area during line flyback, additional means are provided for discharge overloads only in that part of the target scanned by a predetermined number of scanning lines immediately after field flyback.

4,143,306

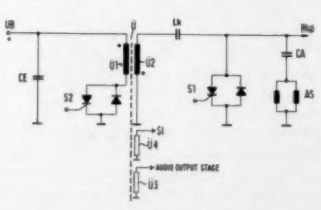
HORIZONTAL DEFLECTION CIRCUIT

John Shepherd, Nellingen, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Oct. 11, 1977, Ser. No. 840,942

Int. Cl.[2] H01J *29/70*

U.S. Cl. 315—408 **8 Claims**



1. A horizontal deflection circuit for generating the deflection current in the deflection coil of a television picture tube wherein a first switch controls the horizontal sweep, and wherein a second switch in a so-called commutation circuit with a commutating inductor and a commutating capacitor opens the first switch and, in addition, controls the energy transfer from a dc voltage source to an input inductor, characterized in that the input inductor (Le) and the commutating inductor (Lk) are combined in a unit designed as a transformer (Ü) which is proportioned so that the open-circuit inductance of the transformer is essentially equal to the value of the input inductor (Le), while the short-circuit inductance of the transformer (Ü) is essentially equal to the value of the commutating inductor (Lk), and that the second switch (S2) is connected in series with the dc voltage source (UB) and a first winding (Ü1) of the transformer (Ü).

4,143,307

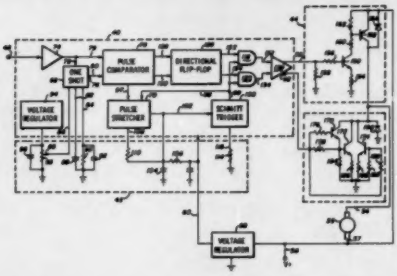
MOTOR SPEED CONTROL CIRCUIT APPARATUS

Russel W. Hansen, 5111 Severance Dr., San Jose, Calif. 95123, and Hans H. Stellrecht, 924 Ferngrove Dr., San Jose, Calif. 95129

Filed Jul. 22, 1977, Ser. No. 818,002

Int. Cl.[2] H04Q *7/02*

U.S. Cl. 318—16 **20 Claims**



1. A motor speed control circuit for controlling the operation of a DC motor in response to an input modulated control signal, comprising;

demodulator means responsive to the input control signal and operative to develop a first output signal including a series of pulses having widths proportional to any positive difference between the pulses of the input control signal and a series of corresponding reference pulses, and for developing a second output signal including a series of pulses having widths proportional to any negative difference between the pulses of the input control signal and said series of references pulses;

power supply means normally coupled to one side of the energizing windings of the DC motor to be controlled;

a circuit ground;

dynamic braking means responsive to said first output signal and operative to couple said power supply means to the other side of the energizing windings of the DC motor so as to short the back EMF of the motor and apply a braking force thereto; and

mtor drive circuit means responsive to said second output signal and operative to couple the other side of the energizing windings of the motor to said circuit ground so as to cause said power supply to provide driving power to the energizing windings of the motor.

4,143,308

CONTROL FOR VARIABLE RELUCTANCE MOTORS

Michel Deplante, Paris, and Didier Minesi, Fargeau-Ponthierry, both of France, assignors to Engins Matra, Paris, France

Filed May 16, 1977, Ser. No. 797,364

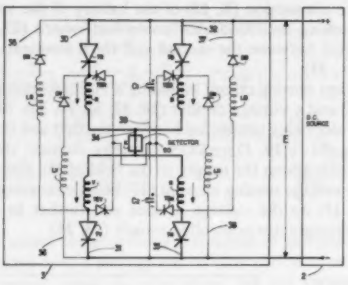
Claims priority, application France, May 19, 1976, 76 151280

Int. Cl.[2] H02K *29/00*

U.S. Cl. 318—138 **9 Claims**

1. In a control for a variable reluctance motor energized from a D.C. source, including a power control circuit actuated by a command circuit, in which the power control circuit comprises a plurality of solid-state main control switches each connected in series with one winding of the motor to form a corresponding plurality of terminal branches, one end of half

of the terminal branches being connected to each pole of the D.C. source and the other ends of all of the terminal branches being connected to each other by a central branch, the command circuit actuating the main control switches to energize the windings in predetermined sequence, the improvement comprising:

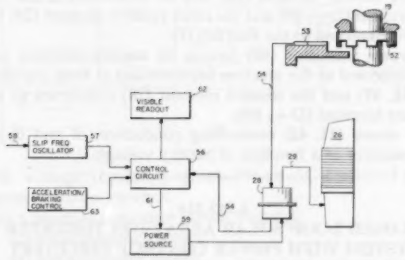


a corresponding plurality of free-wheel branches for supplying energy from the motor to the D.C. source whenever no more than one main control switch is closed, each free wheel branch comprising a coil and a diode connected in series between the junction of the main control switch and the winding in one terminal branch and the pole of the D.C. source to which that terminal branch is not connected.

4,143,309
TURBOMOLECULAR PUMP DRIVE METHOD AND APPARATUS

Williams G. Patterson, 3571 South Court, Palo Alto, Calif. 94306

Filed Apr. 11, 1977, Ser. No. 786,579
Int. Cl.² H02P *5/40*
U.S. Cl. 318—807 **12 Claims**



1. A method of reducing the temperature of operation of a turbomolecular pump having an induction motor incorporated therein for rotating the pump rotor; which motor includes a stator for generating a rotating magnetic field having a frequency of rotation proportional to the frequency of alternating current applied thereto by a power source, and a rotor connected to said pump rotor reactive to said rotating magnetic field by applying sufficient torque to said pump rotator to rotate the same axially, comprising the steps of:

sensing the frequency of rotation of the induction rotor of said motor;

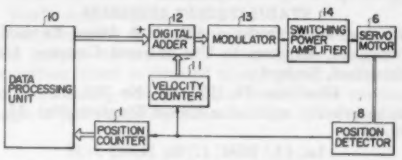
providing a signal defining a slip frequency selected to be the difference between the frequency of rotation of said pump rotor and the frequency of rotation of said magnetic field; and

utilizing the frequency of rotation of the induction rotor of said motor and said slip frequency defining signal to generate a frequency correction signal for application to said power source to control the frequency of alternating current applied thereby to said motor stator.

4,143,310
APPARATUS FOR POSITIONING

Masaaki Fujinawa, Hachioji; Tatsuo Goto, Tokyo, and Mineo Harada, Owari-asahi, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Dec. 1, 1976, Ser. No. 746,627
Claims priority, application Japan, Dec. 5, 1975, 50-143981
Int. Cl.² G05B *19/24*
U.S. Cl. 318—571 **19 Claims**



1. An apparatus for positioning an object comprising

servo motor means for controlling the position of a controlled object,

first means for detecting the position and velocity of the controlled object and for producing signals concerning these quantities,

data processing means for producing a reference velocity signal including means for storing a group of predetermined reference velocities corresponding to the position and velocity of said controlled object in the form of a reference velocity table, means for reading the output signal from said first means, and means for producing a reference velocity signal corresponding to the position and velocity of said controlled object in accordance with said reference velocity table,

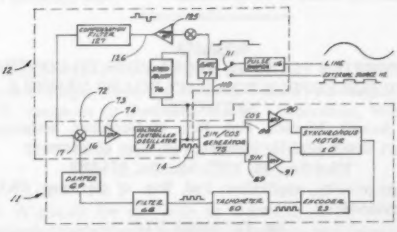
second means for adding the reference velocity signal and the velocity signal obtained from said first means, and

third means responsive to the output signal of said second means for controlling and driving said servo motor means.

4,143,311
HYSTERESIS SYNCHRONOUS MOTOR RATE SERVO SYSTEM

Dennis Lee, Pasadena, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 30, 1976, Ser. No. 728,091
Int. Cl.² G05B *5/01*
U.S. Cl. 318—611 **6 Claims**



1. In a velocity feedback servo control system for maintaining a direct current hysteresis synchronous motor in operation at a constant speed, the improvement comprising the provision of at least two velocity control loops in which one loop is a rate damping loop which is responsive to the variations of

speed of said motor from said constant speed and compensates for said variations and the other loop is a steady state error loop which is responsive to a commanded motor speed for adjusting the motor speed to be substantially equal to said commanded motor speed, said operating constant speed being substantially equal to said commanded motor speed, and in which both loops utilize a common voltage controlled oscillator for providing control signals to said motor at a frequency responsive to signals from all of said velocity control loops, said control signal from said voltage controlled oscillator being phase locked to said commanded motor speed, the response of said steady state error loop being substantially independent of said motor speed variations.

4,143,312
STABILIZED PLATFORMS

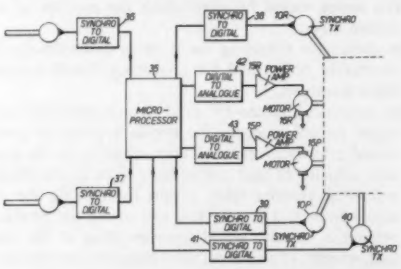
George Duckworth, Oadby, and David R. James, Twyford, both of England, assignors to The Marconi Company Limited, Chelmsford, England

Filed Mar. 29, 1977, Ser. No. 782,384

Claims priority, application United Kingdom, Nov. 15, 1976, 47474/76

Int. Cl.[2] **B64C** *17/06;* **H01Q** *1/34*

U.S. Cl. 318—649 **11 Claims**



2. An arrangement comprising a member mounted for rotation about a reference axis on a body which in operation is subject to angular deviations about two orthogonal axes, said axes being pitch and roll axes, and a control system for stabilising said reference axis, said control system comprising means for deriving error signals representative of deviations in pitch and roll of said body, means for converting said error signals representative of deviations in pitch and roll to further error signals representative of angular errors in two orthogonal planes containing said reference axis, and means for generating from said further error signals control signals for use to compensate for deviations of said reference axis due to pitch or roll of said body, and means for utilizing said control signals to compensate for such pitch or roll deviations whereby said reference axis tends to be stabilized.

4,143,313
AUTOMOTIVE VOLTAGE REGULATOR TO CONTROL VOLTGE SUPPLY TO AN ON-BOARD VEHICLE NETWORK

Armin Arendt, Munich, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stutgart, Fed. Rep. of Germany

Filed Sep. 16, 1977, Ser. No. 834,000

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1976, 2644643

Int. Cl.[2] **H02J** *7/14*

U.S. Cl. 322—28 **6 Claims**

1. Automotive voltage regulator to control the output voltage of an automotive vehicular alternator in a vehicular on-board network, in which the network includes

a battery (**14**) charged by the alternator and having one terminal connected to ground chassis (**21, R**) and the other to a load junction (**13**);

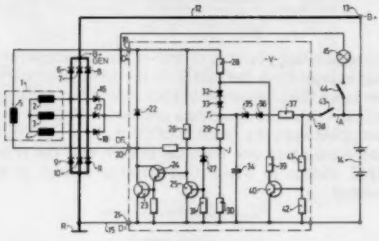
said regulator having a first terminal (**D+, 19**) connected to the field terminal of the field (**5**) of the alternator (**1**);

a second terminal (**DF, 20**) connected to the other field terminal of the field (**5**) of the alternator (**1**);

A third terminal (**D−, 21**) connected to a chassis, or reference connection (**R, 15**) of the battery of the vehicle;

a switching semiconductor controlled switch (**23, 24**) connected between the second and third terminals (**DF, 20; D−, 21**);

a voltage sensing circuit including a voltage sensing element (**27**) and a voltage divider (**28, 32, 33, 29, 30**), the voltage divider being connected between the first and third terminals (**D+, 19; D−, 21**) to thereby connect the voltage divider across the supply to the field of the alternator (**1**), the voltage sensing element (**27**) being connected to a first tap (**J**) on the voltage divider and further to control a semiconductor controlled switch (**23, 24**);



a second tap (**J'**) on said voltage divider positioned between the first tap (**J**) and the first terminal (**19, D+**);

current supply means (**35, 36, 37, 38; 43, A**) connected to the second tap of said voltage divider to modify the current through the voltage divider and hence the voltage controlling the semiconductor controlled switch;

the voltage divider (**28, 32, 33, 29**) connected between the first tap (**J**) and the first terminal (**D+, 19**) comprising two resistor elements (**28, 29**) and at least one diode (**32, 33**) serially connected between said resistor elements whereby one resistor element (**28**) will be connected to the first terminal (**D+, 19**) and the other resistor element (**29**) will be connected to the first tap (**J**);

a bypass transistor (**40**) having its emitter-collector path connected to the junction between said at least one diode (**32, 33**) and the resistor element (**28**) connected to said first terminal (**D+, 19**);

and means (**41, 42**) controlling conduction of said bypass transistor as a function of battery voltage.

4,143,314
CLOSED LOOP SOLAR ARRAY-ION THRUSTER SYSTEM WITH POWER CONTROL CIRCUITRY

Robert P. Gruber, North Olmsted, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

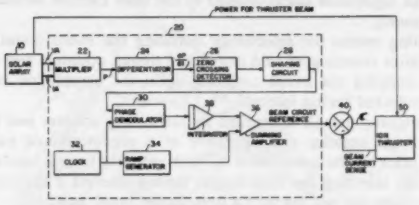
Filed Mar. 29, 1978, Ser. No. 891,370

Int. Cl.[2] **H02J** *7/00;* **G05F** *1/46*

U.S. Cl. 323—15 **6 Claims**

1. A power control circuit for a solar array ion thruster system wherein the ion thruster beam current is controlled so as to operate the solar array at the maximum power point, said power control circuit being connected between the solar array and the ion thruster and receiving signals from said solar array corresponding to the solar array current and the solar array voltage, said power control system comprising multiplier means for multiplying together said solar array voltage signal and said solar array current signal to produce a power signal, differentiation means for differentiating said power signal,

detector means for determining when the output of said differentiator means lies above and below a predetermined level and for providing an output in accordance therewith, a clock circuit, phase comparator means for comparing the phase of the output of said detector means with the phase of said clock circuit and producing an output in accordance therewith,



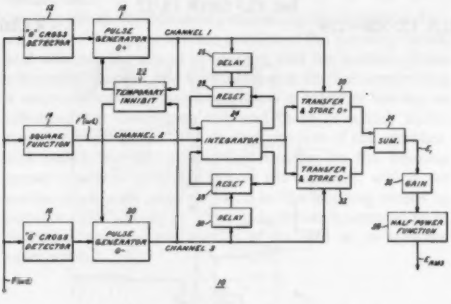
integrator means for integrating the output of said phase comparator means over a predetermined time period so as to produce an output signal for controlling the ion thruster, and means controlled by said clock circuit for introducing controlled variations on the output signal of the power control circuit so as to ensure that said differentiator means produces an output.

4,143,315

RMS TRANSDUCER AND VOLTAGE REGULATING SYSTEM EMPLOYING THE SAME

Fred W. Kelley, Jr., Media, Pa., assignor to General Electric Company, Philadelphia, Pa.

Filed Oct. 25, 1977, Ser. No. 844,661
Int. Cl.[2] H02J *3/18*
U.S. Cl. 323—24 **35 Claims**



18. Voltage regulating system for an AC electrical power system, which comprises:

(a) a reactive converter which includes:

(1) fixed capacitor means,

(2) fixed inductor means,

(3) static switching means in series circuit relation with said fixed inductor means, said static switching means including gating means for controlling the conduction angle of said switching means so as to control the magnitude of reactive current traversing said inductor means;

(b) first means for providing a reference electrical output signal representative of a desired voltage level;

(c) second means for providing an electrical output signal representative of the RMS value of the voltage waveform at a critical point in said AC power system at which good voltage regulation is desired, said second means including:

(1) first signal processing means for generating a first electrical output signal representative of the squared value of said voltage waveform;

(2) second signal processing means for generating second electrical output signals at zero crossings of said voltage waveform;

(3) third signal processing means for integrating said first electrical signal over time periods defined by said second electrical output signals and generating a third output signal therefrom, said third output signal being representative of the integrated squared value of said waveform over one of said time periods and reset means operable at zero crossings of said waveform for resetting said third signal processing means to start said third signal processing means on a new integrating operation;

(4) fourth signal processing means for receiving said third output signal and developing a substantially continuous fourth output signal representative of the value of said third output signal at said zero crossings and update means operable at said zero crossings for updating said fourth output signal; and

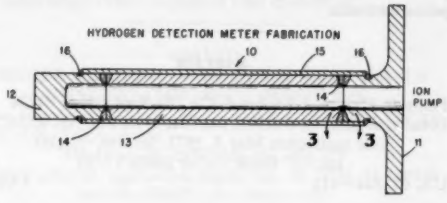
(d) third means for comparing said electrical signals of said first and second means and generating an output signal therefrom which is directed to said gating means of said static switching means so as to control said conduction angle of said switching means.

4,143,316

HYDROGEN CONSENTRATION METER UTILIZING A DIFFUSION TUBE COMPOSED OF 2 ¼ CR-1 MO STEEL AND A SLEEVE OF NICKEL

Prodyot Roy, Saratoga; David W. Sandusky, and Robert T. Hartle, both of San Jose, all of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 7, 1977, Ser. No. 831,191
Int. Cl.[2] G01N *27/00, 27/62*
U.S. Cl. 324—33 **5 Claims**



1. In a hydrogen meter for measuring hydrogen concentration in liquid sodium comprising a diffusion tube assembly, ion pump means connected to create a vacuum within said diffusion tube assembly, and power supply and current readout means connected to said ion pump means; the improvement comprising said diffusion tube assembly being provided with a composite membrane consisting of a diffusion tube composed of 2¼ Cr-l Mo steel, and a sleeve of essentially pure nickel about said diffusion tube.

4,143,317

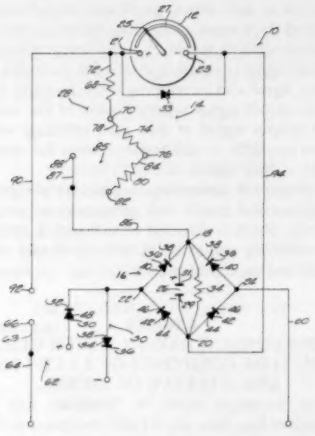
MULTIPLE RANGE PEAK READING VOLTMETER

James L. Pogue, Zion, and John M. Kutzler, Waukegan, both of Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Sep. 27, 1976, Ser. No. 726,997
Int. Cl.[2] G01R *19/04, 19/14, 15/08*
U.S. Cl. 324—103 P **21 Claims**

1. A circuit for use with an electrical meter having two terminals to selectively indicate the polarity and the magnitude of a peak value of a voltage, said circuit comprising a diode bridge including positive and negative terminals and first and second probe terminals, a capacitor connected across said positive and negative terminals, first conductor means, including variable resistance switching means connected to and

between one of said positive and negative terminals and one of said meter terminals, for selectively coupling one of the meter terminals to said positive terminal and the other of said meter terminals to said negative terminal, second conductor means, including filter switching means, having a pair of diodes with an anode of a first of the diodes and a cathode of the second of the diodes connected to one of said first and second probe



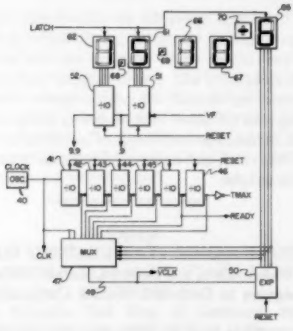
terminals for selectively coupling said probe terminals to a single polarity of a voltage impressed across an electrical element, whereby said capacitor is charged so that the magnitude of the positive voltage differential between said positive and negative terminals is substantially equal to the magnitude of the peak value of the single polarity of voltage coupled to said probe terminals.

4,143,318

WIDE RANGE DIGITAL METER

Philip C. Harvey, 6 Elmbrook Cir., Bedford, Mass. 01730

Division of Ser. No. 645,789, Dec. 31, 1975, Pat. No. 4,035,720. This application May 5, 1977, Ser. No. 794,218
Int. Cl.[2] G01R *19/26;* H03K *13/20*
U.S. Cl. 324—111 **1 Claim**



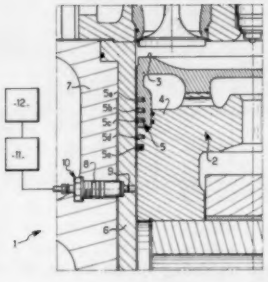
1. A wide range current measuring apparatus comprising:
a capacitor;
means for charging said capacitor as a function of the current to be measured
detector controlled means for discharging said capacitor back to a controlled voltage when the capacitor reaches a preselectable threshold level;
a timing counter having a plurality of stages, successive ones of which are driven by the respective preceeding stages, each stage corresponding to a respective possible timing interval differing from the others by an order of magnitude;
a clock pulse source for driving said timing counter;
an event counter for counting the operations of said discharging means, said event counter having a plurality of stages essentially corresponding in number to the number of significant digits desired in the final current measurement;
gating means for selectively initiating the event counting after resetting of said event and timing counters and for stopping the event counting upon the completion of a selected timing interval;
switching means, controlled by the timing counter and the event counter and operative at a predetermined point prior to the completion of each possible timing interval, for selecting the next longer timing interval if the event count has not reached a preselected level; and
an exponent counter responsive to the number of operations of said switching means whereby the value in the event counter is indicative of the amplitude of the current to be measured when multiplied by a radix raised to an exponential power corresponding to the value in the exponent counter.

4,143,319

METHOD FOR MAGNETICALLY DETERMINING THE DEGREE OF WEAR OF A PISTON RING OF AN INTERNAL COMBUSTION ENGINE WHILE RECIPROCATING THEREON

Jean S. R. Rouam, Marly la Ville, France, assignor to Societe d'Etudes de Machines Thermiques S.E.M.T., Saint Denis, France

Filed Jun. 10, 1976, Ser. No. 694,681
Claims priority, application France, Oct. 1, 1975, 75 30108
Int. Cl.[2] G01R *33/12*
U.S. Cl. 324—219 **4 Claims**

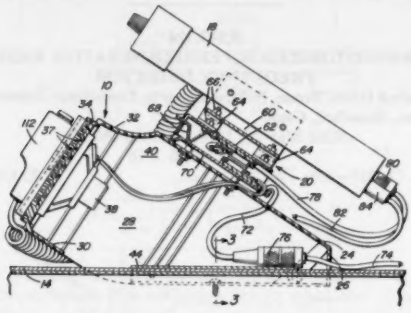


1. A method for continuously measuring and following the degree of the wear condition of a piston ring of an internal combustion engine, having a predetermined magnetic permeability, in sliding reciprocating contact with a second element comprising the steps of:
providing said piston ring with a plating or coating having a predetermined magnetic permeability lower than the permeability of said piston ring;
establishing a reference level for an acceptable degree of wear for the plating or coating in sliding reciprocating contact with the second element;
measuring during the sliding reciprocating contact the reluctance variations in a magnetic circuit comprising the piston ring and an inductive sensor, the sensor being supported by the second element and having one end which is in sliding reciprocating contact with the plating or coating of the piston ring; and
comparing the reluctance variations as measured by the sensor, to the reference level.

4,143,320
ROOF OR FLOOR CB RADIO MOUNT

Bradley W. Johnson, 3238 Minnesota Ave., Stevens Point, Wis. 54481

Filed Feb. 25, 1977, Ser. No. 772,342
Int. Cl.[2] H01B 1/38
U.S. Cl. 325—15 6 Claims



1. A combined loudspeaker enclosure and mounting apparatus for a sound producing unit such as a citizen's band radio and the like, comprising:

housing means having an upper surface portion disposed at an angle relative to lower portions of said housing means, the lower portions of said housing means being mountable to environment surfaces such as a floor, a roof, and the like, the plane of the upper surface portion of the housing means being disposed at an angle to said environment surfaces;

speaker means mounted within the housing means to project sound from said housing means in a direction coincident with the plane of the upper surface portion of the housing means; and

mounting means for releasably mounting the sound producing unit to the upper surface portion of the housing means, and wherein the sound producing unit has a microphone connected thereto, the housing means further comprising a microphone mounting member, the member having an enlarged slot formed on one end there of which tapers from said end toward the central portion of the member, and means for connecting the member to the housing means comprising tab means on the member, which tab means align with slots disposed in the housing means in either a right-side-up or an up-side-down manner so as to maintain the enlarged mouth of the slot in an upward orientation.

4,143,321
APPARATUS AND PROCESS FOR GROUPING PULSE SIGNALS ACCORDING TO SOURCE

Keith H. Norsworthy, Bellevue, Wash., assignor to The Boeing Co., Seattle, Wash.

Filed May 25, 1977, Ser. No. 800,538
Int. Cl.[2] H04B 1/16
U.S. Cl. 325—67 12 Claims

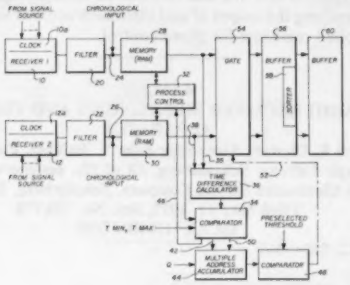
1. Apparatus for grouping pulses, which are produced by a plurality of sources, according to source in real time, said apparatus being useful in a system environment which includes first and second spaced receivers, wherein each pulse produced by each source arrives at said first and second receivers at different times, and wherein said first and second receivers each include means for establishing the time at which each pulse arrives, said apparatus comprising:

memory means for storing the established time of arrival data for each pulse which arrives at the first and second receivers over a selected interval of time;

means determining the time difference between the time of arrival data for selected pulses from the first receiver and the time of arrival data for selected pulses from the second receiver in succession;

first comparing means comparing each said determined time difference with a preset range of time differences;

means accumulating a known numerical quantity each time a particular time difference satisfies the preset range, in a location corresponding to said particular time difference, resulting in an accumulated total quantity for each time difference in the preset range following the completion of the determining, comparing and accumulating functions for the pulses stored in said memory means over the selected interval of time;



second comparing means comparing each total accumulated quantity with a pre-established threshold quantity;

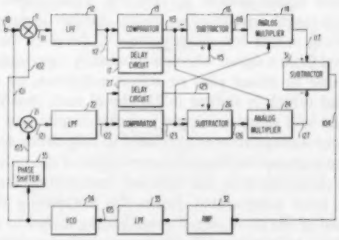
means responsive to said second comparing means for routing to a first storage means each pair of pulses from the first and second receivers for which a time difference has been determined for which in turn a total quantity has been accumulated which satisfies the threshold quantity; and

means grouping all pairs of pulses in said first storage means according to their respective time differences.

4,143,322
CARRIER WAVE RECOVERY SYSTEM APPARATUS USING SYNCHRONOUS DETECTION

Tadao Shimamura, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Sep. 30, 1977, Ser. No. 838,173
Claims priority, application Japan, Sep. 30, 1976, 51-118159
Int. Cl.[2] H04B 1/16; H03D 3/02
U.S. Cl. 325—320 8 Claims



1. A carrier wave recovery apparatus comprising: an input terminal for receiving a carrier-suppressed modulated signal; a voltage controlled oscillator forming a source of a carrier wave for demodulation of said modulated signal; first and second phase detector means supplied with the output of said voltage controlled oscillator directly and through a 90° phase shifter, respectively, for demodulating said modulated signal; first and second comparator means for determining the polarity of the output voltages of said first and second phase detector means with respect to a reference voltage and for providing

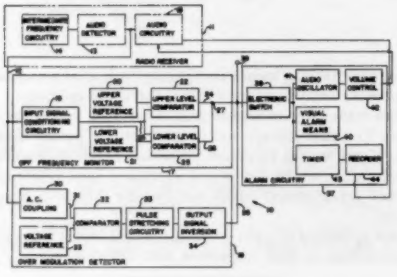
a predetermined output voltage of a polarity depending on the determined polarity; a first subtractor for providing the difference between the outputs of said first phase detector and said first comparator; a second subtractor means for providing the difference between the output of said second phase detector and said second comparator; a first analog multiplier means for multiplying the outputs of said first subtractor and said second comparator; a second analog multiplier means for multiplying the outputs of said second subtractor and said first comparator; a third subtractor means for providing the difference between the outputs of said first and said second multipliers; and means for supplying the output of said third subtractor to said voltage controlled oscillator for phase control.

4,143,323

RADIO RECEIVER MONITORING AND TESTING APPARATUS

Richard F. Cieslak, Algonquin; John V. Balding, Palatine, and Joseph Lafrenz, Schaumburg, all of Ill., assignors to Industrial Electronics Service Company, Schaumburg, Ill.

Filed May 11, 1977, Ser. No. 795,778
Int. Cl.[2] H04B *17/00*
U.S. Cl. 325—363 **9 Claims**



1. Monitoring and testing circuitry for attachment to a radio receiver to monitor and test a detected intermediate frequency (IF) signal and an audio signal from a demodulator portion of said radio receiver to determine if a radio signal received from radio transmitting equipment is within permissible transmitting frequency tolerances, said circuitry comprising:

input signal conditioning means having a high input impedance characteristic for minimal loading of said demodulator, filtering means for filtering audio frequencies from the detected signal to obtain any DC component present therein, said input signal conditioning means providing an output signal related to said DC component, and said input signal conditioning means further comprises level shifting means for shifting the DC level of the detected signal from a signal which is nominally zero volts, and can deviate to either plus or minus polarities, to an output signal which is shifted in DC level such that the output signal will remain a single polarity despite any deviation;

an upper voltage reference related to magnitude to the maximum permissible frequency deviation of the radio signal in one direction from the nominal transmitting frequency;

upper level comparator means for comparing the output signal of the input signal conditioning means to said upper voltage reference, said upper comparator means changing output state whenever the output signal of the signal conditioning means exceeds said upper voltage reference;

a lower voltage reference related in magnitude to the maximum permissible frequency deviation of the radio signal in another direction from the nominal transmitting frequency;

lower level comparator means for comparing the output signal of the input signal conditioning means to said lower voltage reference, said lower comparator means changing output state whenever the output signal of the signal conditioning means is below said lower voltage reference; and

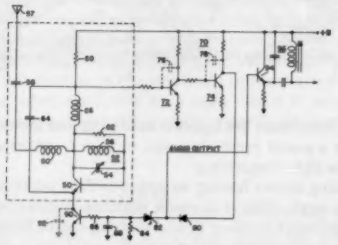
alarm means responsive to a changed output state of either the upper or lower level comparator means to indicate that said transmitting equipment is not within permissible transmitting frequency tolerances.

4,143,324

TRANSISTORIZED SUPERREGENERATIVE RADIO FREQUENCY DETECTOR

Manfred Davis, Bronx, N.Y., assignor to Transcience Industries, Inc., Stamford, Conn.

Filed May 20, 1976, Ser. No. 688,206
Int. Cl.[2] H04B *1/16*
U.S. Cl. 325—429 **23 Claims**



1. Superregenerative detector apparatus which comprises

(a) an oscillatory circuit tuned to the frequency of the signals to be detected, said circuit comprising

(i) a transistor having a base, a collector and an emitter,

(ii) a circuit including a resonant circuit providing the only direct current path to said base, said resonant circuit being connected between said base and said collector,

(b) a quenching circuit comprising

(i) means including a capacitor for establishing a quench frequency,

(ii) means connecting said capacitor between the collector and emitter of said transistor,

(iii) means for applying operating voltage to said capacitor,

(iv) said capacitor supplying current to said oscillatory circuit until the voltage at said base reaches the turn on voltage of said transistor thereby establishing the quench frequency of said circuit without additional biasing means connected to said base.

4,143,325

CONSTANT AMPLITUDE INTERFERENCE SQUELCH SYSTEM

Leonard R. Kahn, 137 E. 36 St., New York, N.Y. 10016

Filed Aug. 20, 1976, Ser. No. 716,332
Int. Cl.[2] H04B *1/10*
U.S. Cl. 325—478 **5 Claims**

1. A squelch circuit for muting constant amplitude interference during idle signal periods comprising:

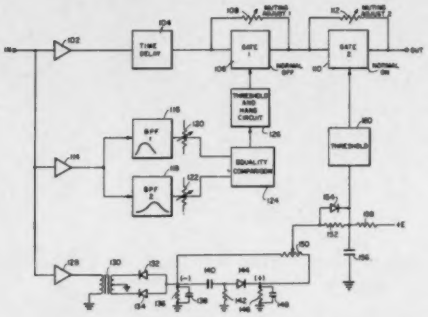
(a) a rectifier circuit connected to a signal circuit which produces an unidirectional voltage as a function of the input level including syllabic variations of speech signals,

(b) coupling means for passing at least a substantial part of the syllabic voltage variation at the output of the (a) rectifier circuit to,

(c) a second rectifier circuit wherein an unidirectional voltage proportional to the coupled syllabic voltage variation is produced and wherein the polarity of said unidirectional voltage is opposite to that of the voltage produced by the (a) rectifier,

(d) means for combining the unidirectional voltages pro-

duced by the (a) and (c) rectifier circuits which is connected to,



(e) a muting circuit so constructed as to mute waves fed therethrough to a utilization device when the (d) combined wave has the same polarity as the (a) rectifier circuit and is greater than a predetermined voltage.

4,143,326

SIGNAL DELAY SYSTEM

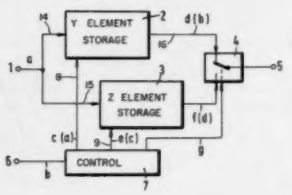
Jürgen Heitmann, Seeheim, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 21, 1977, Ser. No. 808,691

Claims priority, application Fed. Rep. of Germany, Jun. 22, 1976, 2627830

Int. Cl.² H03K *5/159, 21/36*

U.S. Cl. 328—55 **4 Claims**



1. An apparatus for delaying a digital signal for n periods of a timing signal having frequency t comprising:

(a) first storage means having a capacity y which is less than n, having an input connected to the digital signal, having a control input, and having an output;

(b) second storage means having a capacity z which is less than n and greater than n−y, having an input connected to the digital signal, having a control input and having an output;

(c) switching means having a first input connected to the output of the first storage means, having a second input connected to the output of the second storage means, having a control input and having an output, said switching means selectively relaying signals received at its first and second inputs to its outputs; and

(d) control means having an input for receiving the timing signal having frequency t, having a first output connected to the control input of the first storage means, having a second output connected to the control input of the second storage means, having a third output connected to the control input of the switching means, said control means controlling the receipt of the digital signal by the first storage means until its capacity is reached, controlling the receipt of a next portion of the digital signal to the second storage means until its capacity is reached, and, after n periods of the timing signal, controlling the switching means to selectively relay preselected portions of the stored signal in each storage means to the output thereof.

4,143,327

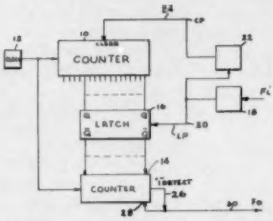
METHOD AND APPARATUS FOR GENERATING TONE SIGNALS AND THE LIKE

Alan B. Welsh, Jasper, Ind., assignor to Kimball International, Inc., Jasper, Ind.

Filed Jul. 8, 1977, Ser. No. 813,824

Int. Cl.² H03K *1/16*

U.S. Cl. 328—61 **18 Claims**



1. A pulse generating circuit comprising: first binary counter means having a clock terminal and a clear terminal and a plurality of least significant bits output terminals and a plurality of most significant bits output terminals, second binary counter means having clock terminal means and load terminal means and output terminal means which pulses at a predetermined count in said second counter means and also having input terminal means for loading a count in said second counter means, latch means interposed between the input terminal means of said second counter means and the most significant bits output terminals of said first counter means, means for clocking said first and second counter means at a first higher frequency, first means for clocking said latch means at a second lower frequency, and second means for clearing said first counter means after clocking of said latch means, the frequency of the pulses at the output terminal means of said second counter means differing a small amount from a whole multiple of said second frequency.

4,143,328

DIGITAL PHASE LOCK LOOP CIRCUIT AND METHOD

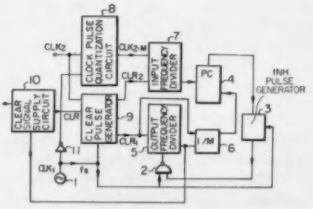
Shoichi Kurita, Yamato; Yoshitaka Hiratsuka, Yokohama, and Kazuya Shuto, Kawasaki, all of Japan, assignors to Fujitsu Limited, Japan

Filed Nov. 8, 1977, Ser. No. 849,706

Claims priority, application Japan, Nov. 10, 1976, 51-135026

Int. Cl.² H03K *1/17*

U.S. Cl. 328—155 **31 Claims**



1. A digital phase lock loop circuit for phase-locking an input clock signal to an output clock signal, comprising:

a fixed frequency oscillator for generating a fixed-frequency standard clock signal,

inhibit means responsive to a received inhibit pulse for selectively passing said standard clock signal,

output frequency divider means for frequency-dividing said

standard clock pulse from said fixed frequency oscillator to produce an output clock pulse,

output clock pulse divider means for frequency-dividing the output clock pulse of said output frequency divider means,

phase comparator means for receiving said input clock pulse and said frequency-divided output clock pulse so as to generate a phase comparison output,

inhibit pulse generator means for receiving the phase comparison output of said phase comparator means, and responsive thereto for generating said inhibit pulse received by said inhibit means,

said digital phase lock loop circuit further comprising clear pulse generator means for generating a clear pulse, said output frequency divider means and said output clock pulse divider means being responsive thereto for clearing the respective contents thereof, thereby causing said output clock pulse to instantaneously follow said input clock pulse.

4,143,329
SIGNAL SAMPLING CIRCUIT

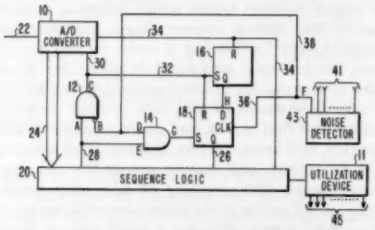
Anthony D. Robbi, E. Amwell Township, Hunterdon County, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 9, 1977, Ser. No. 805,141

Claims priority, application United Kingdom, Jun. 15, 1976, 24720/76

Int. Cl.² H03K *17/16*

U.S. Cl. 328—163 **9 Claims**



1. A plurality of signal sampling circuits operating in the presence of high noise levels, comprising:

an equal plurality of converter means, each having a first signal, representative of a given parameter, applied as one input thereto and operating to provide a second signal representative of the one input signal as an output therefrom;

an equal plurality of utilization means, each connected to a respective second signal converter output to regulate and vary a control signal;

means detecting the noise generated by the regulation and variation of the control signals; and

feedback means connected to the converter means and the utilization means to indicate when noise is coincident with the operation of the converter.

4,143,330
DETECTOR CIRCUIT

Shigeru Nagasawa, Kawasaki, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

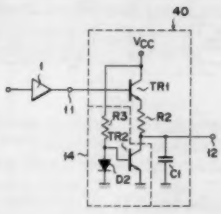
Filed Dec. 5, 1977, Ser. No. 857,763

Claims priority, application Japan, Dec. 9, 1976, 51-164911[U]

Int. Cl.² H03D *1/10, 1/18*

U.S. Cl. 329—101 **3 Claims**

1. A detector circuit comprising a reference potential point, a detector circuit output terminal, a detector element having a high-frequency input terminal and a detector element output terminal, resistor means coupled between said detector element output terminal and said detector circuit output terminal, a constant current source coupled between said detector circuit output terminal and said reference potential point, and



capacitor means coupled between said detector circuit output terminal and said reference potential point.

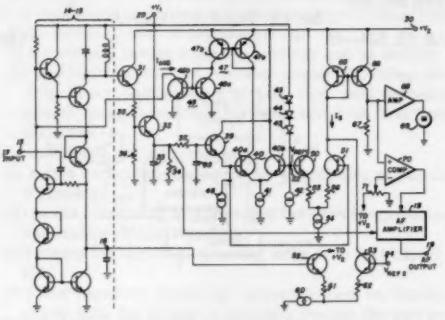
4,143,331
SUMMING AMPLIFIER FOR DEVELOPING A SQUELCH AND METER VOLTAGE IN A RADIO RECEIVER

Ronald W. Page, Sunnyvale, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Dec. 16, 1977, Ser. No. 861,160

Int. Cl.² H03G *3/34*

U.S. Cl. 330—2 **3 Claims**



1. An integrated circuit for generating a direct current potential proportional to the signal applied to an alternating current signal amplifier, wherein said signal amplifier includes delayed automatic gain control, said circuit comprising:

signal amplifying means having a variable gain characteristic with the gain being controlled to be proportional to the current flowing in said amplifying means and a current control terminal

detector means coupled to said signal amplifying means to demodulate said signal and to produce a d-c potential proportional to the output of said signal amplifying means;

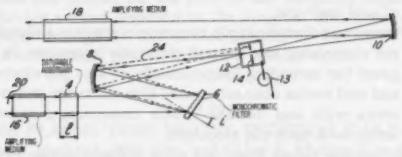
automatic gain control means responsive to said d-c potential, including a current control means coupled to said terminal and operative to reduce the gain of said signal amplifying means in proportion to said d-c potential, said current control means further including a differential amplifier with a reference input to provide threshold means to delay the onset of automatic gain control until said d-c potential exceeds a predetermined value, and

summing amplifier means coupled to said d-c potential and to said signal amplifying means to be responsive to said current flowing in said signal amplifying means to produce a signal input level related current directly proportional to said applied signal.

4,143,332
WAVE-LENGTH SELECTIVE CUT-OUT DEVICE

Maurice Michon, Draveil, and Genévieve Girard, Jouy en Josas, both of France, assignors to Compagnie Generale d'Electricite S.A., Paris Cedex, France

Filed Nov. 2, 1976, Ser. No. 738,265
Claims priority, application France, Nov. 13, 1975, 75 34625
Int. Cl.[2] H01S *3/10*
U.S. Cl. 330—4.3 **1 Claim**

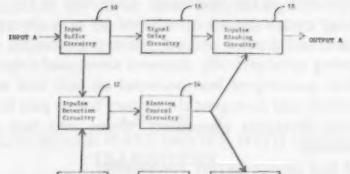


1. A wave-length selective cut-out device disposed on the path of a light pulse between two laser amplifying media, said device comprising a saturable absorbing medium, said medium absorbing light for at least one of the spectral lines corresponding to a laser transition in the amplifying media, and a monochromatic filter allowing the passage of light pulses only for wave-lengths corresponding to said spectral lines, said monochromatic filter comprising, optically in series: a plane grating inclined on said path and operative in the blaze of the wavelength of the spectral line corresponding to a laser transition in the amplifying media, and two opposing concave mirrors having a common focus, and said monochromatic filter further comprising an apertured diaphragm disposed in an evacuated enclosure at said common focus with said aperture coaxial therewith.

4,143,333
IMPULSE NOISE REMOVING APPARATUS

Robert G. Jacobsen; Thomas H. Warner, both of Cambridge, Mass., and David P. Misunas, 24 Church St., Watertown, Mass. 02172, assignors to David P. Misunas, Cambridge, Mass.

Filed May 16, 1977, Ser. No. 797,308
Int. Cl.[2] H03F *1/26*
U.S. Cl. 330—149 **29 Claims**



1. A system comprising:

(a) means for accepting an input signal having audibly proper components and impulse noise components, said impulse noise components being of various sizes;

(b) means responsive to said input signal for producing a transformed signal having attenuated audibly proper components and intensified impulse noise components;

(c) means responsive to said transformed signal for producing an averaging signal characterized by instantaneous sizes that correspond to averaged sizes of predetermined time spans of said transformed signal;

(d) means responsive synchronously to said transformed signal and said averaging signal for producing a detection signal having specified components, which are characterized by sizes that vary functionally with sizes of said impulse noise components;

(e) means responsive to said detection signal for producing a control signal having blanking components characterized by varying time spans that are functionally related to said sizes of said specified components;

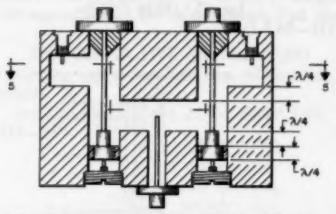
(f) means responsive to said input signal for producing a time delayed signal corresponding to said audio signal; and

(g) means responsive synchronously to said time delayed signal and said control signal for producing an improved audio signal.

4,143,334
MICROWAVE/MILLIMETER WAVE OSCILLATOR

Michael Dydyk, Scottsdale, Ariz., assignor to Motorola Inc., Schaumburg, Ill.

Filed Mar. 16, 1978, Ser. No. 887,142
Int. Cl.[2] H03B *7/14*
U.S. Cl. 331—56 **15 Claims**

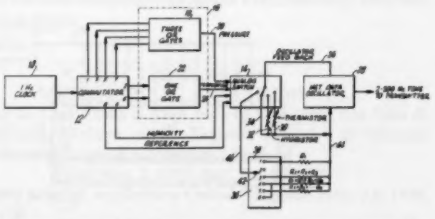


1. Oscillating apparatus for frequencies on the order of microwave, millimeter wave and above, comprising primary oscillatory circuitry including an active device coupled into said circuitry for sustaining oscillations therein and a first resonant circuit tuned to have a higher order mode of operation at a predetermined frequency, a second resonant circuit tuned to operate at the predetermined frequency and coupled to said primary oscillatory circuitry for controlling oscillations therein to the predetermined frequency, and output means coupled to said first resonant circuit for removing power therefrom at the predetermined frequency.

4,143,335
PRESSURE SENSOR INCLUDING A RESISTOR COMMUTATOR FOR PROVIDING UNAMBIGUOUS ATMOSPHERIC PRESSURE DATA

John Beukers, Stony Brook, N.Y.; Maurice Friedman, Roslyn, and Luken Potts, Merion, both of Pa., assignors to Beukers Laboratories, Inc., Bohemia, N.Y.

Filed Oct. 4, 1977, Ser. No. 839,211
Int. Cl.[2] G01L *9/02*; H01C *1/012, 10/46*; H03B *5/20*
U.S. Cl. 331—65 **3 Claims**



1. A commutator plate for use with a pressure sensor in which an arm is movable in accordance with the ambient pressure, said plate comprising an insulating substrate, a plurality of spaced conducting segments disposed on one surface of said subtrate over which said arm is movable to engage different ones of said segments in accordance with the ambient

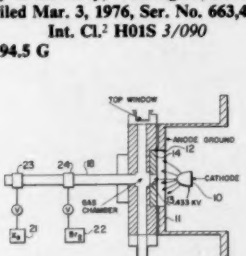
pressure, a plurality of resistance means sequentially arranged and operatively connected between selected pairs of said conducting segments, the nominal values of resistance of each of said resistance means being selected such that with the maximum anticipated deviation of the value of resistance of said resistance means from said nominal values the actual value of resistance of each of said resistance means is greater than that of the preceding one of said resistance means and less than that of the following one of said resistance means, whereby a unique value of resistance is unambiguously associated with each of said conducting segments, said resistance means being connected to alternating ones of said conducting segments, and a reference resistor connected to the remaining ones of said conducting segments.

4,143,336

XENON BROMIDE (XEBR) EXCIMER LASER

Stuart K. Searles, Burke, Va., and George A. Hart, Levant, Me., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 3, 1976, Ser. No. 663,408
Int. Cl.[2] H01S *3/090*
U.S. Cl. 331—94.5 G **7 Claims**



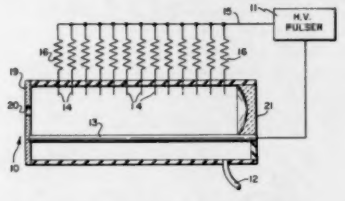
6. A Xenon Bromide excimer laser which comprises:
an electron excitation means for generating a high energy electron beam;
a laser cavity with its optical axis transverse to the electron beam generated by said electron excitation means;
a gaseous mixture of Xe and Br_2 in said laser cavity;
said Br_2 forming from 0.1–4% of said mixture.

4,143,337

METHOD OF PUMPING

Jacques Beaulieu, St. Foy, Canada, assignor to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Ottawa, Canada

Continuation-in-part of Ser. No. 731,693, May 21, 1968, abandoned. This application Jun. 30, 1971, Ser. No. 158,209
Claims priority, application Canada, Apr. 19, 1968, 017844
Int. Cl.[2] H01S *3/097*
U.S. Cl. 331—94.5 PE **11 Claims**



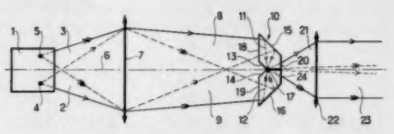
1. Apparatus for pumping a laser molecular gas comprising:
an electrode system adapted to be maintained in a blanket of said laser gas at a pressure of the order of atmospheric pressure,
said electrode system having a first electrode structure and a second electrode structure spaced from said first electrode structure,
a pulse voltage source for producing voltage pulses of sufficient potential to initiate an electrical discharge between said first and second electrodes,
means connecting said electrode system in series with said pulse voltage source,
means to adjust the electron flux of said discharge to have an average electron kinetic energy approximately equal to a predetermined upper molecular vibrational energy state of said laser gas,
wherein said first electrode structure comprises a plurality of pin electrodes, said second electrode comprises an elongated bar extending longitudinally of said pin electrodes, and said means connecting said first electrode structure in series with said voltage source comprises a resistor in series with each pin electrode,
said voltage pulses from said pulse voltage source having a duration less than the time required to establish a bright arc discharge in said laser molecular gas.

4,143,338

GAS LASER DEVICE

Bruno Godard, Gif sur Yvette, and Jean-Paul Gaffard, Plaisir, both of France, assignors to Compagnie Generale d'Electricite S.A., Paris, France

Filed Jan. 3, 1977, Ser. No. 756,527
Claims priority, application France, Jan. 7, 1976, 76 00246
Int. Cl.[2] H01S *3/02*
U.S. Cl. 331—94.5 C **3 Claims**



1. Gas laser device comprising:
a laser generator including a longitudinal enclosure, an active gas medium therein and means for creating a travelling wave excitation which runs through the active medium from one end of the enclosure to the other so as to trigger in the active medium the emission of a laser radiation extending along an axis parallel to the longitudinal direction of the enclosure, composed of two elementary laser output beams constituted by rays diverging from a first and from a second point respectively, said points being symmetrically disposed about said axis;
a first convergent lens centered on said axis and through which said divergent elementary beams pass to change the two divergent elementary beams into two convergent beams;
and said device further comprising:
a pair of parallel-sided optical prisms placed in the path of said convergent elementary beams and being symmetrically disposed about a plane of symmetry which includes said axis and is perpendicular to the line joining said first and second points, and being in surface contact at said axis; each of said prisms having five faces including first and second parallel side faces comprising reflecting surfaces disposed obliquely to the plane of symmetry; third and fourth faces at a first edge, the third face lying in the plane of symmetry and being in contact with the corresponding third face of the other prisms and the fourth face being an exit surface perpendicular to the plane of symmetry and facing away from said first lens; and a fifth face which is an entry surface at a second edge opposite to the first edge also perpendicular to the plane of symmetry and facing said first lens, the parallel reflecting first face of each prism intersecting said axis and the parallel reflecting

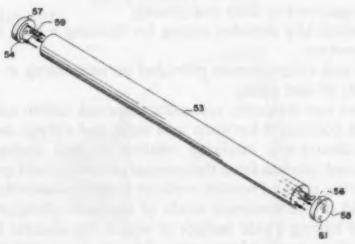
second face intersecting said exit surface remote from said axis such that said pair of parallel-sided optical prisms receive said two convergent beams which are reflected on the first and second faces of the optical prisms and are focussed substantially at one point of intersection of the parallel reflecting first faces which intersect at said axis such that the two convergent beams are changed, after reflecting on the second face of respective optical prisms into a single divergent beam issued from said point of intersection,and a second convergent lens centered on said axis and placed on the path of the outgoing beam and having a focus disposed on the image of said intersecting point through the exit surface defined by the fourth faces of said optical prisms, to form a parallel beam.

4,143,339

LASER PLASMA TUBE HAVING INTERNAL GAS PATH

Robert J. Buzzard, Palo Alto, and Galen E. Mohler, Los Altos, both of Calif., assignors to Lexel Corporation, Palo Alto, Calif.

Filed Mar. 14, 1977, Ser. No. 776,824
Int. Cl.² H01S *3/02*
U.S. Cl. 331—94.5 D **18 Claims**



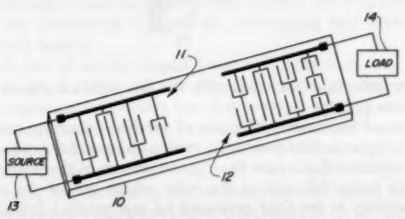
1. A plasma tube for a gas laser comprising structure having at least a portion of a generally straight-lined path discharge cavity extending lengthwise therethrough along which electrical gaseous discharge takes place for the generation of coherent energy, said structure also defining a gas return path extending therethrough from one end thereof to the other for return flow of gas from one end of said discharge cavity to the other, said gas return path including at least three sections within said structure having directional components parallel to the discharge cavity path, which sections are communicated with one another for serial flow therethrough in opposite directions to increase the length of the gas return path and thereby cause gaseous discharge to take place preferentially in said discharge cavity.

4,143,340

ACOUSTIC SURFACE WAVE DEVICE WITH IMPROVED TRANSDUCER

Bill J. Hunsinger, Mahomet, Ill., assignor to The Magnavox Company, Fort Wayne, Ind.

Filed Sep. 1, 1976, Ser. No. 719,552
Int. Cl.² H03H *9/04, 9/26, 9/30;* H01L *41/10*
U.S. Cl. 333—151 **12 Claims**



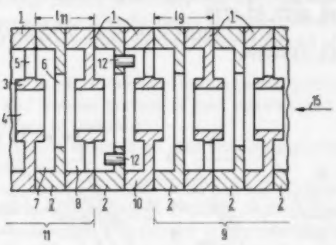
1. An Acoustic surface wave device comprising: a substrate of a material capable of propagating acoustic surface wave energy; at least one electro-acoustic transducer coupled to a region of a surface of the substrate; and the transducer including a first and a second bus bar positioned parallel and a distance from each other, the first bus bar having a plurality of electrodes spaced apart and extending toward the second bus bar, and the second bus bar having a plurality of electrodes extending toward the first bus bar, a predetermined number of the plurality of electrodes of the second bus bar having a forked configuration so that each of the electrodes of the first bus bar opposite a forked electrode is positioned within the forked configuration with preselected ones of the electrodes of the first bus bar being positioned further within the opposing forked configuration than other electrodes of the first bus bar.

4,143,341

DELAY LINE FOR TRAVELING WAVE TUBES, IN PARTICULAR TO THE AMPLIFICATION OF MM WAVES

Franz Gross, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jun. 13, 1977, Ser. No. 805,641
Claims priority, application Fed. Rep. of Germany, Aug. 13, 1976, 2636633
Int. Cl.² H01J *25/34, 23/24;* H01P *5/08*
U.S. Cl. 333—157 **10 Claims**



1. In a traveling wave tube delay line wherein a wave guide is provided with transverse walls each including a central electron beam opening and at least one coupling opening which, together with an adjoining transverse wall, form a resonant cavity line cell, and wherein in the direction of the electron beam a first line portion encountered by the electron beam has a lower delay than the delay of a subsequent line portion, the cavities of each of said portions being mutually identical, the improvement in combination therewith comprising: a transition section between said first and subsequent portions comprising a single resonant cavity matching cell including a pair of transverse walls of which at least one thereof includes compensating means to substantially eliminate matching errors.

4,143,342

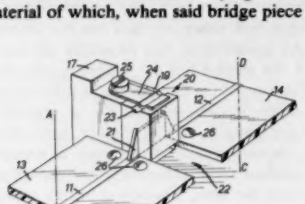
MICRO-CIRCUIT ARRANGEMENTS

William D. Cain; Denis G. Hall, both of St. Albans, and John D. Middleton, Welwyn, all of England, assignors to Marconi Instruments Limited, Chelmsford, England

Filed Nov. 7, 1977, Ser. No. 849,349
Claims priority, application United Kingdom, Nov. 13, 1976, 47352/76
Int. Cl.² H01P *5/00*
U.S. Cl. 333—33 **10 Claims**

1. A micro-circuit arrangement comprising two micro-circuits each within adjacent individual compartments having a common wall, and wherein a gap is provided in said common wall adjacent the ends of a microstrip conductor in each micro-

circuit which are to be connected one to the other and a bridge piece is provided to fit into said gap, said bridge piece consisting of a block of dielectric material carrying a member of conductive material of which, when said bridge piece is fitted



into said gap, one end of said conductive member electrically connects with one of said micro-strip conductors and the other end of said conductive member connects with the other of said microstrip conductors.

4,143,343

ACOUSTIC SURFACE WAVE INTERACTION DEVICE

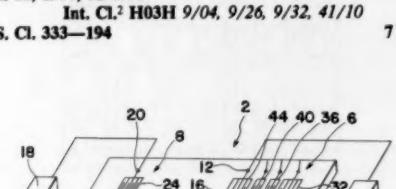
Atushi Inoue, and Hideharu Ieki, both of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Nagaokakyo, Japan

Filed Aug. 30, 1977, Ser. No. 829,094

Claims priority, application Japan, Sep. 3, 1976, 51-106098; Jan. 18, 1977, 52-4778

Int. Cl.[2] H03H *9/04, 9/26, 9/32, 41/10*

U.S. Cl. 333—194 **7 Claims**



1. In an acoustic surface wave interaction device including a body of peizoelectric material propagative of acoustic waves along a surface thereof and a transducer arrangement actively coupled to said surface for effecting change between electrical energy and acoustic surface wave energy, the improvement in which;

said transducer arrangement has a plurality of pairs of comb-shaped electrode arrays which are electrically connected in series and which are disposed in alignment with each other to effect interaction with said surface waves, each electrode array having a plurality of teeth, the tip ends of said plurality of being enveloped by a curve representing the inverse Fourier transform of the transfer function of the device, the teeth of one of the arrays of each of said pairs being inter-leaved with the teeth of the other of the arrays of said pair so as to form a plurality of interleaving teeth, the amount of interleaving between said plurality of interleaving teeth and number of interleaving teeth included in each of said pairs of comb-shaped electrode arrays selected such that the number of interleaving teeth is relatively great where said plurality of interleaving teeth have a small amount of interleaving and the number of interleaving teeth is relatively small where said plurality of interleaving teeth have a large amount of interleaving, for making the impedance of each of said plurality of pairs of comb-shaped electrode arrays equal.

4,143,344

MICROWAVE BAND-PASS FILTER PROVIDED WITH DIELECTRIC RESONATOR

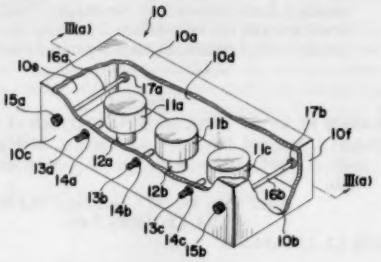
Toshio Nishikawa, Nagaokakyo; Youhei Ishikawa, and Sadahiro Tamura, both of Kyoto, all of Japan, assignors to Murata Manufacturing Co., Ltd., Nagaokakyo, Japan

Filed Jun. 10, 1977, Ser. No. 805,572

Claims priority, application Japan, Jun. 14, 1976, 51-70260

Int. Cl.[2] H01P *1/20, 7/06*

U.S. Cl. 333—202 **8 Claims**



1. A microwave filter comprising;

an electrically shielded casing for forming a path for a microwave;

input and output means provided on said casing at opposite ends of said path;

at least one dielectric resonator disposed within said casing and positioned between said input and output means and in electrically insulated relation to said casing and in spaced relation from the internal surface of said casing and having top and bottom surfaces around which the electric field of the dominant mode of resonant vibration is high and having a side surface at which the electric field of a spurious mode of resonant vibration is concentrated; and

at least one member provided adjacent and at the side of said dielectric resonator where the intensity of the electric field produced by said spurious mode is high for shifting the frequency of said spurious mode from a high frequency region to a low frequency region and overlapping said dominant mode with said spurious mode for improving the sensitivity characteristic of said dominant mode.

4,143,345

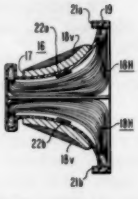
DEFLECTION YOKE WITH PERMANENT MAGNET RASTER CORRECTION

William H. Barkow, Pennsauken, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 6, 1978, Ser. No. 913,239

Int. Cl.[2] H01F *1/00*

U.S. Cl. 335—212 **8 Claims**



1. A deflection yoke assembly for use with a cathode ray tube, comprising:

a pair of horizontal and a pair of vertical deflection coils;

first magnetic field producing means disposed for producing respective fields near the top and bottom of the yoke near the beam exit end of the yoke which are of the same polarity as the field produced by said vertical deflection coils; and

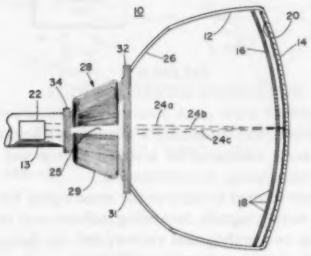
second flux altering means disposed adjacent the inside flare of said yoke at the top and bottom at a central portion of the length of said yoke for adding a barrel shape component to said vertical deflection magnetic field near the vertical deflection axis; said first and second means altering said vertical deflection field for producing raster distortion correction.

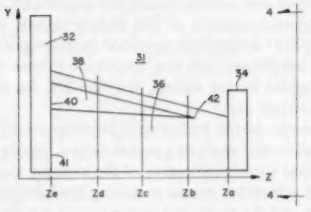
4,143,346

SELF CONVERGING, NORTH/SOUTH PIN CUSHION CORRECTED HYBRID YOKE

Suresh R. Borkar, Bombay, India, and Wayne R. Chiodi, Northbrook, Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

Filed Jul. 26, 1977, Ser. No. 819,040
Int. Cl.[2] H01F *7/00*
U.S. Cl. 335—213 **4 Claims**





1. A deflection yoke for use in a color image display system of the type including a picture tube having an electron gun assembly for producing a plurality of coplanar in-line beams which are scanned for producing a raster on the viewing screen of said picture tube, said yoke comprising:

a pair of vertical deflection coils adapted for converging said beams along the vertical axis of said screen; and

a pair of saddle shaped horizontal deflection coils each having average first and second moment winding distribution parameters selected for converging said beams on said screen;

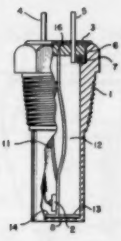
said pair of saddle shaped horizontal deflection coils each having a front end winding distribution simultaneously exhibiting a relatively low first moment winding distribution parameter M_1 for north/south pincushion correcting said deflection yoke and a high second moment winding distribution parameter M_2, relative to said low first moment, for facilitating convergence of said beams by said deflection yoke throughout said raster.

4,143,347

TEMPERATURE DETECTOR

Shunji Ichida, Kamakura, Japan, assignor to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 3, 1978, Ser. No. 892,565
Claims priority, application Japan, Apr. 25, 1977, 52-51361[U]
Int. Cl.[2] H01C *3/00*
U.S. Cl. 338—28 **4 Claims**



1. A temperature detecting device comprising:

a protective tube means having a flat inner bottom surface and a top opening end;

a resilient metallic member positioned within said tube means, said member having a bottom portion essentially parallel to said bottom surface of said tube means and in substantial surface contact therewith, said member having the remaining portion essentially perpendicular to said bottom portion and slightly longer than the distance between the bottom surface and the top opening end of said tube;

a thin layer of metal, softer than said member, positioned between said bottom portion of said member and said bottom surface of said tube;

a thermistor means mounted on said remaining portion of said member; and

a tube closing means adapted to fit on said top opening end of said tube means, positioned to compress the remaining portion of said member to thereby urge contact between said bottom portion of said member and bottom surface of said tube means.

4,143,348

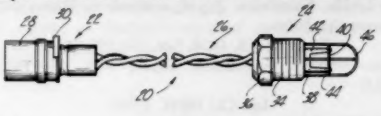
AIR TEMPERATURE SENSOR CONNECTION ASSEMBLY

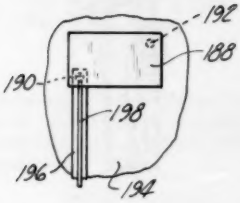
Robert R. Hoge, Birmingham, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Dec. 5, 1977, Ser. No. 857,560
Int. Cl.[2] H01C *7/02*
U.S. Cl. 338—28 **5 Claims**

1. A temperature sensor for sensing the temperature of a fluid comprising a base member having at least first and second support arms thereon, fin means formed of a thin disc having a high surface area to mass ratio fixingly mounted on said first and second support arms whereby said fluid to be sensed may flow over the top and bottom surface of said fin means, a semiconductor chip having the characteristic of changing resistance with changes in temperature mounted on said fin means, said semiconductor chip having a first and a second terminal on a single surface of said chip, one of said terminals being in electrical contact with said fin means, insulating means supported on said fin means between an edge of said fin means and said chip, conductive means mounted on said insulating means and within the confines thereof, the other of said termi-

nals being in electrical contact with said conductive means, a first output conductor connected to said fin means, a second





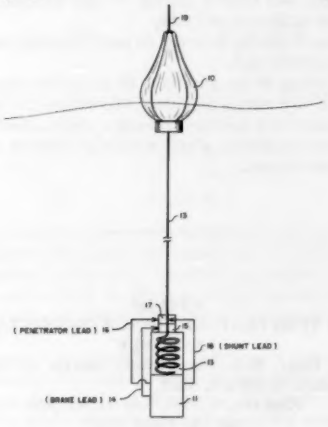
output conductor electrically insulated from said fin means and electrically connected to said conductive means.

4,143,349

CABLE DEPTH SELECTOR AND COIL SHUNT PENETRATOR

Derek J. Bennett, Thousand Oaks, Calif., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Nov. 14, 1977, Ser. No. 850,946
Continuation of Ser. No. 721,053, Sep. 7, 1976, abandoned.
Int. Cl.[2] B63B *21/52*
U.S. Cl. 340—2 **13 Claims**



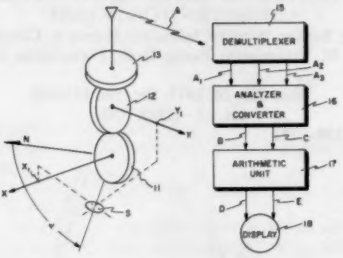
1. In a system for suspending an immersible package in a body of water from a surface buoy at some selected depth, said system having an insulated signal cable payed out from a coil as said package descends to provide a center conductor with electrical insulation for communicating electrical signals between said buoy and said immersible package, said coil having a total length greater than said selected depth; apparatus for connecting an insulated shunt lead to said center conductor in said cable in order to bypass remaining cable coiled in said coil, an improvement comprising a driving spring and a block next to a cable guide through which said cable is being payed out, and means for guiding said block in a motion against said cable under the force of said spring; means for releasably holding said block away from said cable and against said spring; at least one pointed pin connected to said shunt lead with electrical insulation throughout except for a length at a pointed end thereof sufficient for the pin to penetrate said electrical insulation around said center conductor and contact said center conductor; means for holding said pin in a fixed position on a side of said cable opposite said block; and means for activating said block holding means to release said block for motion against said cable to impale said cable on said pin.

4,143,350

SIGNAL ENHANCEMENT SYSTEM

John D. Keown, Haycock Township, Bucks County, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 19, 1971, Ser. No. 126,373
Int. Cl.[2] H04G *11/00*
U.S. Cl. 340—5 R **3 Claims**



1. An apparatus for enhancing a continuous analog signal indicative of noise emanated by a sound source and random background, comprising, in combination:

sensing means formed to receive the noise signal for providing three analog signals, two being indicative of the amplitude along two orthogonal vectors and one being indicative of the omnidirectional amplitude;

analyzing means operatively connected to continuously receive said analog signals for sequentially analyzing the frequency spectra of the analog signals and producing thereby two digitally encoded output signals indicative of the amplitude sine and amplitude cosine of the two orthogonal vector signals, respectively, for each frequency spectrum; and

arithmetic means including computer means connected to receive said analyzing means output signals for producing output signals indicative of the running averages thereof, and subtracter means receiving the computer output signals and the analyzing means output signals for producing and storing signals indicative of the differences in amplitude for producing an output signal indicative of a net integrated intensity of the analyzing means output signals.

4,143,351

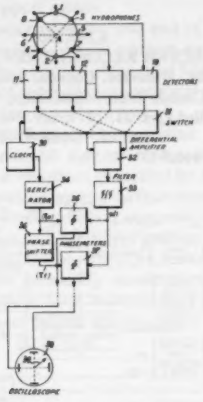
SONIC DIRECTION FINDER

Francois Orieux, Paris, France, assignor to CSF-Compagnie Generale de Telegraphie Sans Fil, Paris, France

Filed May 21, 1964, Ser. No. 369,324
Claims priority, application France, May 21, 1963, 935,491
Int. Cl.[2] G01S *3/80, 3/84*
U.S. Cl. 340—6 R **9 Claims**

1. A direction finding system for determining the direction from which short sonic or ultrasonic pulses are incoming, comprising: a plurality of electroacoustic transducers forming a circular arrangement; electronic means for sequentially switching in and out pairs of diametrically opposed transducers; differential means having two inputs, respectively con-

nected by said electronic means to said switched-in transducers, and an output for providing the differential output signal of



each of said pairs; and means for deriving the phase of said output signal.

4,143,352

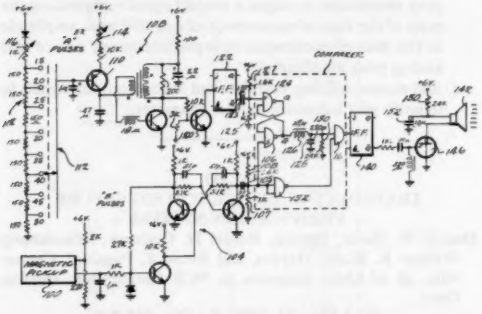
AUDIBLE SPEED INDICATOR

Paul Jarmotz, 343 McCormick Ave., State College, Pa. 16801

Filed Jul. 26, 1977, Ser. No. 819,010

Int. Cl.[2] B60Q *1/54*

U.S. Cl. 340—53 **12 Claims**



1. An apparatus for producing a train of audio pulses having a frequency which varies with the speed of a vehicle above a predetermined speed comprising:

means for producing a first train of electrical pulses having a frequency which varies with the vehicle speed and increases with increase in vehicle speed;

manual control means having a settable condition indicating a desired vehicle speed;

means for producing a second train of electrical pulses having a frequency which varies with the condition of said manual control means;

means for comprising said first and second pulse trains and producing a third train of electrical pulses having a frequency proportional to the difference between said frequencies of said first and second pulse trains when the frequency of said first pulse train exceeds the frequency of said second pulse train; and

means for converting said third pulse train into a train of audio pulses.

4,143,353

APPARATUS FOR THE SUPERVISION OR CORRECTION OF ELECTRICAL SIGNALS

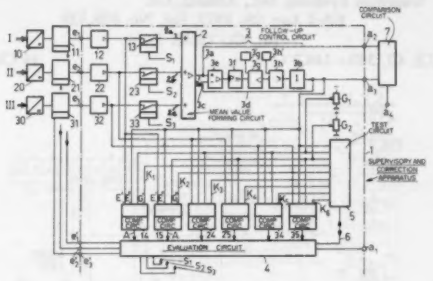
Wolfgang Schaible, Würenlingen, Switzerland, assignor to BBC Brown, Boveri & Company Limited, Baden, Switzerland

Filed Jun. 20, 1977, Ser. No. 808,406

Claims priority, application Switzerland, Jul. 7, 1976, 8685/76

Int. Cl.[2] G06F *11/08*

U.S. Cl. 340—146.1 BE **8 Claims**



1. A signal supervision or correction apparatus, comprising:

a plurality of signal channels which carry signals comparable to one another;

a mean value-forming circuit having an input side and an output side and receiving at its input side the signals carried by the plurality of signal channels;

a signal storage circuit having an input and an output and serving to store and deliver a stored mean value signal;

said mean value-forming circuit having its output side connected with the input of said signal storage circuit;

at least one comparison circuit;

the output of the signal storage circuit being connected, together with at least one signal channel which carries a signal to be supervised, to said comparison circuit in which there is formed, as the supervision criterion, the difference between at least one signal to be supervised and the stored mean value signal.

4,143,354

DETECTION OF ERRORS IN DIGITAL SIGNALS

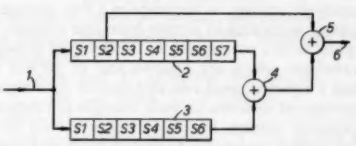
Alan G. Stoddart, Woodbridge, England, assignor to Post Office, London, England

Filed May 6, 1977, Ser. No. 794,512

Claims priority, application United Kingdom, May 12, 1976, 19544/76

Int. Cl.[2] G06F *11/00*; G08C *25/00*

U.S. Cl. 340—146.1 E **9 Claims**



1. A method of error detection in a digital system comprising the steps of:

receiving from a transmitter a serial pattern of digits in which each digit, as transmitted, is a predetermined function of at least two digits each preceding that digit by a particular spacing in the pattern,

comparing a particular digit in the received pattern with the combination, in accordance with the said predetermined function, of at least two digits preceding that digit by the said particular spacing in the received pattern, and generating an error indication in the absence of correlation, and

repeating the comparison for succeeding particular digits in the received pattern, wherein the improvement comprises the step of:

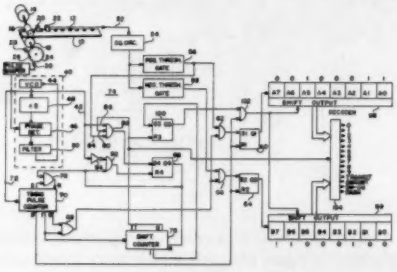
omitting at least one digit in every n (where n is an integer greater than two) for use as the particular digit.

4,143,355

CHARACTER RECOGNITION SYSTEM

Robert M. MacIntyre, Anaheim, Calif., assignor to Signature Guardian Systems, Inc., Atlanta, Ga.

Filed Aug. 29, 1977, Ser. No. 828,329
Int. Cl.[2] G06K 9/18
U.S. Cl. 340—146.3 C **14 Claims**



1. Process of sequentially reading and identifying magnetic characters on a document from a predetermined set of characters having adjacent discrete segments of greater and lesser totality of magnetic flux across the characters in a prescribed path, including the steps of:

driving an endless idler member by engagement of the surface of said idler member with the surface of a driven second endless member;

generating a timing pulse train which is proportional to the surface speed of said idler member;

directing said document along a prescribed path between said idler member and said driven member so that the surface of said document drives said idler member by engaging the surface of said idler member, whereby the timing pulse train is generated at a rate proportional to the rate of travel of the document along said path;

feeding said timing pulses to a counter;

disposing a transducer adjacent to said prescribed path for generating a waveform having a plurality of signal levels including positive and negative excursions generated by the changes in the magnetic flux of said discrete segments of said characters;

detecting the change in amplitude and polarity of said waveform;

actuating said counter when the first portion of said waveform is generated;

successively storing, in sequence in a first storage zone and shifting according to signals from said counter, first state signals which correspond to the detected changes of said waveform which are positive and of greater amplitude than a selected level and also second state signals which correspond to when no such changes are detected;

successively storing, in sequence in a second storage zone and shifting according to signals from said counter, first state signals which correspond to detected changes of said waveform which are negative and of a greater amplitude than a selected level and also second state signals which correspond to when no such changes are detected;

continuing the storing in said first zone and in said second zone of state signals;

establishing in a decoder a plurality of electrical paths which compare simultaneously the state signals from both of the zones, the electrical paths respectively being representative of said predetermined characters; and

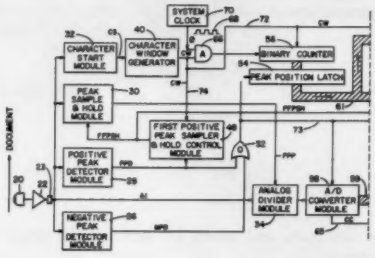
feeding the successive state signals from said zones to said decoder, in accordance with signals from said pulse train, for producing signals from said decoder which are representative of said characters.

4,143,356

CHARACTER RECOGNITION APPARATUS

Robert B. Nally, Waterloo, Canada, assignor to NCR Canada Ltd - NCR Canada Ltee, Mississauga, Canada

Filed Oct. 31, 1977, Ser. No. 846,877
Int. Cl.[2] G06K 9/18
U.S. Cl. 340—146.3 C **22 Claims**



19. A character reading system comprising:

a. means for detecting a plurality of analog peak amplitudes and time of occurrence thereof in an analog waveform representing an unknown unique character;

b. first means responsive to said detected analog peak amplitudes to output a first signal representing the ratio of one of said analog peak amplitudes to a predetermined one of said analog peak amplitudes; second means responsive to the detection of the times of occurrence of said analog peak amplitudes to output a second signal representing the ratio of the time of occurrence of one said peak amplitude to the time of occurrence of a predetermined one of said analog peak amplitudes;

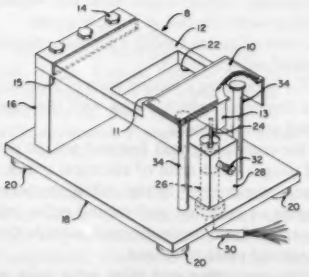
d. and means utilizing said first and second output signals to identify said unknown unique character.

4,143,357

TRANSDUCING DEVICE FOR SIGNATURE VERIFICATION SYSTEM

Donald W. Baver, Dayton; Robert H. Granzow, Miamisburg; William R. Horst, Dayton, and Bruno J. Paganini, Centerville, all of Ohio, assignors to NCR Corporation, Dayton, Ohio

Filed Mar. 24, 1978, Ser. No. 889,766
Int. Cl.[2] G06K 9/00; G01L 5/16
U.S. Cl. 340—146.3 SY **11 Claims**



1. A transducing device for converting to representative

electrical signals those force variations which are produced by the act of a person writing a signature, comprising:

rigid vertical support means;

rigid horizontal support means;

resilient hinge means connecting one end of said horizontal support means to said vertical support means, said hinge means comprising a portion of the rigid horizontal support means which is of reduced cross-sectional area to provide increased flexibility in said portion;

signature writing surface means associated with the other end of said horizontal support means and movable in response to force variations generated by writing a signature on said signature writing surface means;

measuring means secured to said signature writing surface means and extending therebelow; and

sensing means positioned in operative relation to said measuring means for generating an electrical signal which varies in accordance with movement of said measuring means with respect to said sensing means.

4,143,358

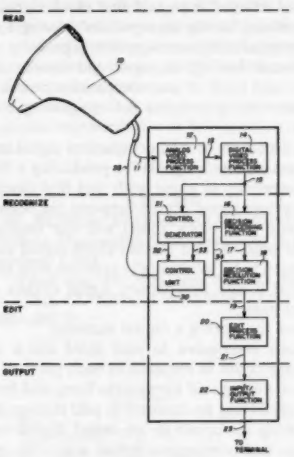
WAND LAMP CONTROL

Marion W. Neff, Irving, Tex., assignor to Recognition Equipment Incorporated, Irving, Tex.

Continuation of Ser. No. 596,170, Jul. 16, 1975, abandoned. This application Mar. 7, 1977, Ser. No. 774,824

Int. Cl.[2] G06K 9/02

U.S. Cl. 340—146.3 AG **8 Claims**



1. The combination comprising:

(a) a hand-held OCR wand having a photosensor array positioned to sense light reflected into said wand from a document through a reading aperture therein, the output of said array being a video signal,

(b) a lamp carried by said wand for illuminating the document facing said aperture for reflection of light onto said array,

(c) recognition means connected to said array to produce a control state when the video signal from said array is below a predetermined level,

(d) timer means responsive to said control state and operable after a predetermined time delay to reduce the power supplied to said lamp, and

(e) means to reset said timer means in response to a change of said control state.

4,143,359

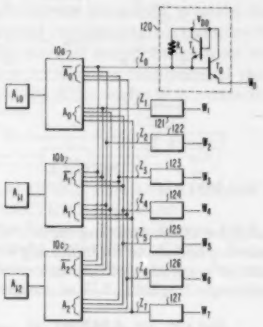
DECODER CIRCUIT

Howard R. Beelitz, Gillett, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 2, 1977, Ser. No. 856,993

Int. Cl.[2] H04Q 9/00

U.S. Cl. 340—166 R **6 Claims**



1. A decoder circuit comprising:

N input lines, each line adapted to receive an input signal; where N is an integer greater than one;

N differential current switches, each switch having: (a) a first input adapted to receive an input signal; (b) a second input adapted to receive a reference potential; (c) $2^{(N-1)}$, distinct first outputs at which are produced signals in-phase with the signal applied to said first input; and (d) $2^{(N-1)}$ distinct second outputs at which are produced signals out-of-phase with the signal applied to said first input;

means connecting each one of said N input lines to a respective one of said first inputs of said N current switches;

2^N conductors; means connecting each one of said 2^N conductors to a distinct combination of one output from each one of said N switches for producing 2^N different combinations of the signals present at said N input lines; and

2^N load means, each load means being connected to a respective one of said 2^N conductors for establishing a first level on a said conductor when all the switch outputs connected to that conductor are in one state and for establishing a second level on said one conductor when all the switch outputs connected to that conductor are not all in said one state.

4,143,360

METHOD AND APPARATUS FOR CONTROLLING A DISPLAY TERMINAL

James I. Bernhart; James W. Nobles, and Ronald L. White, all of Fort Wayne, Ind., assignors to The Magnavox Company, Fort Wayne, Ind.

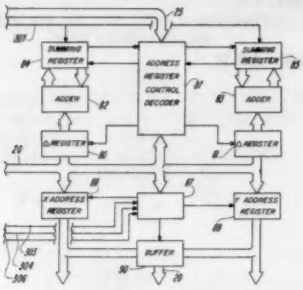
Filed Aug. 27, 1976, Ser. No. 720,702

Int. Cl.[2] G06K 15/18; G06F 3/14

U.S. Cl. 340—711 **8 Claims**

1. An improved display terminal of a type having a matrix addressable display panel, a microcomputer and means to input information, wherein the improvement comprises a vector generator having a delta register to contain a slope of a vector to be generated, a summing register to which are successively added contents from the delta register, an address register to contain an address indicative of a location on the display panel and which is incremented each time the summing register overflows, a bit counter with a capacity equal to the number of addresses for one coordinate of the display panel, the bit counter having a first output coupled to the summing register to cause the summing register to perform a summing operation a predetermined number of times equal to the number of ad-

dresses for one coordinate, the bit counter having a second output coupled to the microcomputer, said second output



being indicative of the summing register having completed all of the summing operations for indicating to the microcomputer completion of generation of the vector.

4,143,361

ANALOG-TO-DIGITAL CONVERTER WITH GAIN CORRECTION AND OFFSET CORRECTION

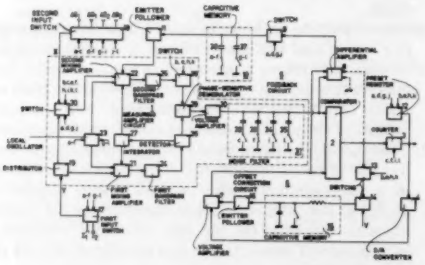
Jan B. Tammes, Borne, and Marinus Toebes, Overdinkel, both of Netherlands, assignors to Hollandse Signaalapparaten B.V., Hengelo, Netherlands

Filed Oct. 14, 1976, Ser. No. 732,359

Claims priority, application Netherlands, Nov. 4, 1975, 7512886

Int. Cl.[2] H03K *13/02*

U.S. Cl. 340—347 CC **6 Claims**



1. An analog-to-digital converter having three modes of operation and comprising a measuring amplifier circuit, a comparator, a counter and a digital-to-analog converter, interconnected in the given order, which digital-to-analog converter feeds the comparator with a voltage for comparison with the output voltage of the measuring amplifier circuit, to cause an analog input voltage applied to the measuring amplifier circuit to be converted into a digital signal delivered by the counter during said first mode, the analog-to-digital converter comprising:

(a) a preset register;

(b) a feedback circuit for recalibrating the gain of the measuring amplifier circuit with an error voltage generated from the output of the measuring amplifier circuit, supplied at its input with a reference voltage, and the digital-to-analog converter, supplied at its input with a first digital signal from the preset register during said second mode with the counter deactivated, said digital signal being representative of said reference voltage;

(c) an offset correction circuit for offsetting the comparator, which comparator is supplied with the output signal from the measuring amplifier circuit while having its input turned off, and with the output signal from the digital-to-analog converter while receiving the digital signal zero from the preset register in said third mode with the counter deactivated, the measuring amplifier circuit comprising a first and a second mixing amplifier, an integrator, a detector and a phase-sensitive demodulator, which demodulator is fed with a first signal voltage via the second mixing amplifier driven by the feedback circuit and with a second signal voltage via the first mixing amplifier and the detector, while both the first and the second mixing amplifiers are set with the integrator connected to the detector.

4,143,362

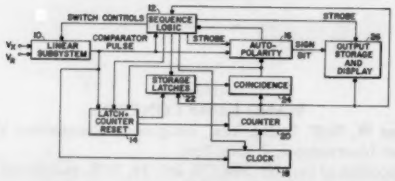
HIGH RESOLUTION AUTO-ZERO CIRCUIT FOR ANALOG-TO-DIGITAL CONVERTER

Richard W. Ulmer, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 27, 1977, Ser. No. 801,112

Int. Cl.[2] H03K *13/20*

U.S. Cl. 340—347 NT **7 Claims**



1. An analog-to-digital converter having a high resolution circuit comprising:

clock means for producing a first clock signal and a second clock signal delayed from said first clock signal;

comparator means having an input and having a threshold voltage for producing a comparison signal;

integrator means having an input and having an output coupled to said input of said comparator means, said integrator means being coupled for integrating a reference voltage;

first means responsive to said comparison signal and to said first and second clock signals for producing a third clock signal substantially in phase with said first clock signal if said comparison signal occurs between the beginning of a pulse of said first clock signal and the beginning of a subsequent pulse of said second clock signal and temporarily delayed to be substantially in phase with said second clock signal if said comparison signal occurs after said subsequent pulse;

storage means for storing a digital number;

counter means responsive to said third clock signal for counting one count in response to each pulse of said third clock signal during said integration from said first voltage and for transferring its contents to said storage means and then resetting its count to an initial digital number in response to said comparison signal; and

means for determining when the counter means reaches a count equal to the digital number stored in the storage means.

4,143,363

NONUNIFORM TRANSLATION BETWEEN ANALOG AND DIGITAL SIGNALS BY A PIECE-WISE LINEAR PROCESS

Berton E. Dotter, Jr., Belmont, Calif., assignor to GTE Automatic Electric Laboratories, Inc., Northlake, Ill.

Continuation of Ser. No. 302,332, Oct. 30, 1972, abandoned. This application Jul. 15, 1974, Ser. No. 488,337

Int. Cl.[2] H03K *13/02*

U.S. Cl. 340—347 AD **6 Claims**

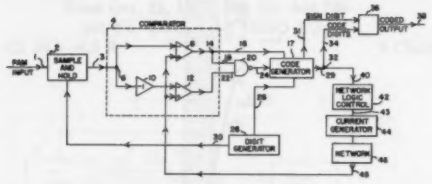
1. In a system using signals in analog form at one point and, at another point, pulses arranged in code groups, each of said

code groups being derived from PAM samples, apparatus for effecting a nonuniform translation on a piece-wise linear basis from one of said forms to the other without substantial alteration of the information content which comprises:

a current generator means;

a digit generator providing a series of timed outputs, said digit generator providing at least one timed output at each of the digit times of the code;

a weighted network means having a plurality of sections, equal in number to the number of segments of the piecewise linear characteristic, each network section corresponding to a particular segment of the piece-wise linear characteristic, and each section having a like number of inputs for selective connection to said generator, thereby dividing each segment into a predetermined number of quantum steps;



control means for interconnecting said generator and said network inputs in a logical manner to derive a succession of comparison voltages, one for each digit time, with the last comparison voltage approximating the amplitude of the sample within a quantum step, said last comparison voltage comprising the sum of the total network voltage for each network section preceding the segment within which the value of the amplitude sample lies plus the sum of the selected quantum steps of said segment;

means for comparing the amplitude sample with the succession of comparison voltages;

means for translating the comparator output into a series of code groups representative of the signal samples for transmission.

4,143,364

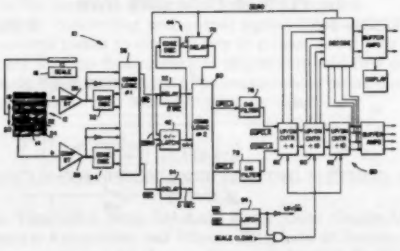
OPTICAL DISPLACEMENT MEASURING SYSTEM

Daniel F. Dlugos, Huntington, Conn., assignor to Pitney-Bowes, Inc., Stamford, Conn.

Filed Aug. 19, 1976, Ser. No. 715,883

Int. Cl.[2] G01G *3/00*; H03K *13/02*

U.S. Cl. 340—347 P **6 Claims**



1. In an analog to digital conversion system for measuring the change of a bidirectionally variable parameter whose change is to be measured with respect to a reference, the system comprising means generating a pair of phase displaced cyclic waveforms as a function of the change to be measured, processing means receiving the waveforms and in response thereto providing a pulse count signal, means receiving the pulse count signal and in response thereto providing value indications of the change with respect to the reference, and means for receiving the value indications of the change with respect to the reference and in response thereto for visually displaying the change of the bidirectionally variable parameter with respect to the reference, the improvement comprising means coupled to the count pulse signal and adapted to block a single pulse of the signal from the receiving means in response to an initial incrementation of the variation from the reference in either one of two directions, whereby the value indication at the reference corresponds to a transition between successive value indications of initial change from the reference in each direction to facilitate calibration of the system through visual recognition of the reference as a transition point rather than a zone.

4,143,365

DEVICE FOR THE ACQUISITION AND STORAGE OF AN ELECTRICAL SIGNAL

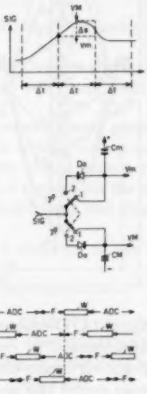
Jacques C. Cayzac, La Varenne, France; Claude J.P.F. le Can, Nijmegen, Netherlands; Roger Brun, Creteil, France; Jacques Devillers, Paris, France, and Etienne Joinnet, Saint-Maur, France, assignors to U.S. Philips Corporation, New York, N.Y.

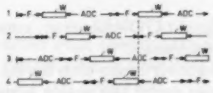
Filed Dec. 28, 1976, Ser. No. 754,969

Claims priority, application France, Dec. 31, 1975, 75 40323; Dec. 14, 1976, 76 37687

Int. Cl.[2] H03K *13/02*

U.S. Cl. 340—347 SH **6 Claims**





1. A device comprising at least one element means for sampling an analog signal and for acquiring amplitude maximum and amplitude minimum information about said signal during successive elementary time intervals of selected duration, said sampling means including at least three channels each having switch means operable to cause bilateral signal sampling and unilateral signal sampling of said maximum and minimum amplitudes in different respective operational time intervals and for providing said maximum and minimum amplitudes information in another operational time interval said channels being time division multiplexed whereby said unilateral sampling intervals in different channels adjoining one another in time; a plurality of analog to digital converter means disposed in said channels respectively and coupled to said switch means for converting said information into digital values and for sequentially providing said values; an information processing element coupled to said converter comprising programmable digital comparator circuit means for determining maximum of the maxima and the minimum of the minima of the signal during a selected number of said elementary time intervals, and a digital counting circuit means coupled to said comparator circuit means for programming said number; and means for

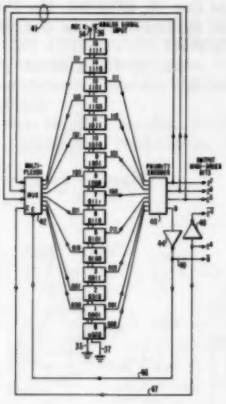
storing digital values corresponding to said maximum of the maxima and minima of the minimum.

4,143,366

ANALOG-TO-DIGITAL CONVERTER

Henry G. Lewis, Jr., Princeton Junction, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 23, 1977, Ser. No. 780,331
Int. Cl.[2] H03K *13/175*
U.S. Cl. 340—347 AD **1 Claim**



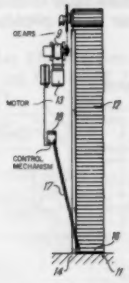
1. An analog-to-digital (A/D) converter, comprising
analog signal input terminals,
a plurality of A/D converter sub-units having analog inputs connected in series across said analog signal input terminals, each sub-units having outputs for bits representing a sub-range of analog voltages, and having a carry output for a carry signal representing an analog voltage exceeding the sub-range of the sub-unit,
a priority encoder having inputs connected to carry outputs of "alternate" ones of said A/D converter sub-units, and having outputs providing all but the lowest-order one of said
a multiplexer having inputs connected to carry outputs of "intermediate" ones of said A/D converter sub-units, and having an address input receptive to the output bits from said priority encoder, and having an output for the one of the inputs passed by the address input, the output providing the lowest-order one of said high-order output bits, and
a plurality of multiplexers each having an address input receptive to said high-order output bits, and having inputs connected to the binary signal outputs of said A/D converter sub-units in a pattern so that output bits from the addressed one of said A/D converter sub-units are provided by a corresponding number of said multiplexers, the output bits constituting the low-order output bits of the A/D converter.

4,143,367

SAFETY DEVICE FOR LIMITING THE MOVEMENT OF DOORS AND THE LIKE ON CONTACT WITH AN OBSTACLE

Rudolf Schestag, Leonberg, Fed. Rep. of Germany, assignor to Erwin Sick Gesellschaft mit beschrankter Haftung Optik-Electronik, Waldkirch, Fed. Rep. of Germany

Filed Sep. 29, 1977, Ser. No. 837,898
Claims priority, application Fed. Rep. of Germany, Oct. 2, 1976, 2644608; Apr. 30, 1977, 2719438
Int. Cl.[2] G08B *21/00*
U.S. Cl. 340—540 **23 Claims**



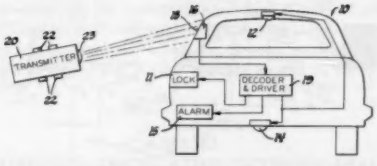
1. A safety device suitable for use in power operated apparatus for producing a safety control signal on contact between an obstacle and at least one part of the apparatus to control the further operation of said apparatus, said safety device comprising a resilient member attachable to a part of an apparatus, at least two electrodes associated with the resilient member and connectable to an electrical supply, means electrically interconnecting said electrodes and capable of passing a current indicative of unobstructed operation of said apparatus and means responsive to deformation of said resilient member following contact therewith to change the electrical conditions prevailing between said electrodes to vary said current and means capable of detecting the variation in current to produce said safety control signal.

4,143,368

VEHICLE OPERATOR SECURITY SYSTEM

William D. Route, Bloomfield Hills; John T. Auman, Washington, and Wesley A. Rogers, Grosse Pointe Park, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 5, 1977, Ser. No. 857,093
Int. Cl.[2] B60R *25/04*; G08B *13/08*
U.S. Cl. 340—543 **3 Claims**



1. An operator-actuated security system for a motor vehicle having a door with lock means, power means to unlock the lock, a light effective to illuminate at least a part of the vehicle, and an alarm effective when energized to produce a sensible effect outside the vehicle, comprising, in combination:
a portable infrared rediation generator effective on one manual actuation to generate a series of pulses of infrared radiation in accordance with a first predetermined digital code and on another manual actuation to generate a series

of pulses of infrared radiation in accordance with a second predetermined digital code; and

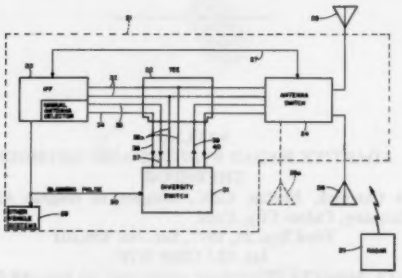
means on the vehicle effective to receive the radiation from said generator and including elements responsive to the first code effective to unlock the door and energize the interior light, whereby an operator external to the vehicle and at a distance therefrom can unlock the door and energize the light, and including further elements responsive to the second code to actuate the alarm should the vehicle operator perceive a reason for so doing.

4,143,369

IFF DIVERSITY SWITCH

Herman W. Ayers, Torrance, Calif., assignor to Northrop Corporation, Los Angeles, Calif.

Filed Oct. 25, 1977, Ser. No. 844,729
Int. Cl.[2] G01S 9/56; H01Q 3/24
U.S. Cl. 343—6.5 R **9 Claims**



1. In an IFF system or the like having at least two antennas, an antenna switch with two control inputs for switching the IFF system from one antenna to the other and means producing a blanking pulse for each received interrogating pulse of a minimum magnitude from an external radar; an antenna diversity switch comprising:

a. a flip-flop controllable from a free-running condition to a bistable condition;

b. means operatively connecting the two complementary outputs of said flip-flop to the two control inputs, respectively, of said antenna switch;

c. flip-flop control means;

d. means conducting the blanking pulses to said flip-flop control means;

e. said flip-flop control means having a first magnitude output signal in response to the absence of blanking pulses thereto, and a second magnitude output signal in response to the presence of blanking pulses thereto; and

f. means conducting said output signals from said flip-flop control means to said flip-flop in proper polarity to make said flip-flop free-running in response to said first magnitude signal and stopped in its instantaneous bistable state in response to said second magnitude signal.

4,143,370

VEHICLE COLLISION ANTICIPATING METHOD AND DEVICE

Teruo Yamanaka, Seto; Takayuki Kato, Aichi; Osamu Ozeki, Nagoya; Kazuo Sato, and Minoru Bito, both of Toyota, all of Japan, assignors to Toyota Kogyo Kabushiki Kaisha and Kabushiki Kaisha Toyota Chuo Kenkyusho, both of, Japan

Continuation of Ser. No. 524,651, Nov. 18, 1974, abandoned, which is a continuation-in-part of Ser. No. 311,909, Jan. 18, 1973, abandoned. This application Jun. 24, 1977, Ser. No. 809,878
Claims priority, application Japan, May 20, 1972, 47-50189
Int. Cl.[2] G01S 9/44
U.S. Cl. 343—7 VM **60 Claims**

1. A vehicle collision anticipating method comprising establishing a predetermined distance range S in front of said vehicle, S representing a time, which is the ratio of the distance R of said object from said vehicle to the apparent velocity v_r of said object as viewed from said vehicle, multiplied by the real relative velicity v which is the magnitude of the relative velocity vector of the object with respect to the vehicle (vR/v_r),

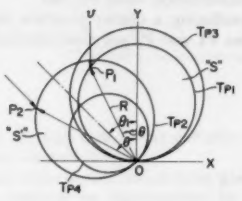
transmitting a wave to an object,

receiving a wave reflected from said object,

generating a low frequency wave by mixing said transmitted and reflected waves, said low frequency wave containing a Doppler signal having first and second components of difference frequencies,

separating said components by frequency-responsive means,

obtaining the distance R from the ratio of the amplitude of said first component to that of said second component



determining the Doppler angular velocity from said low frequency wave,

determining from said Doppler angular velocity the apparent velocity v_r,

determining v from said Doppler signal components when R is sufficiently large so that v_r and v are substantially equal, and

detecting the object entering said predetermined distance range in front of the vehicle by comparing S with a distance obtained as the object approaches said vehicle by taking a time which is the ratio of the determined R to the determined v_r and multiplying said time by the determined v,

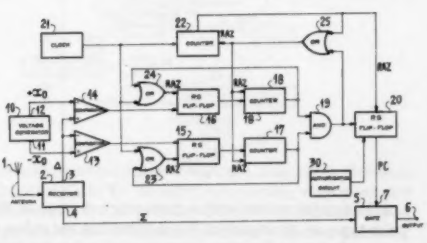
thereby anticipating a collision of the object against the vehicle.

4,143,371

ARRANGEMENT FOR DISCRIMINATING CLUTTER SIGNALS FROM TARGET SIGNALS IN A RADAR SYSTEM

Laurence Salvaudon, and Jean-Claude Charlot, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Oct. 11, 1977, Ser. No. 840,712
Claims priority, application France, Oct. 15, 1976, 76 31070
Int. Cl.[2] G01S 9/22
U.S. Cl. 343—16 R **6 Claims**



6. In a radar system having an antenna, an arrangement for discriminating clutter reception signals from target reception signals, said arrangement comprising:

means for supplying signals indicating the angular divergence between the direction from which are received said

reception signals and at least one plane of symmetry of the antenna;

first comparing means connected to said receiving means for comparing the said angular divergence signals with a first positive threshold + xo;

first measuring means for measuring the probability P1 with which the threshold + xo is positively exceeded by said divergence signal, and

second comparing means connected to said receiving means for comparing the said angular divergence signals with a second negative threshold + xo,

second measuring means for measuring the probability P2 with which the threshold − xo is negatively exceeded by said divergence signal, and

comparing means for comparing said probabilities P1 and P2 with a predetermined value Po, and

means for producing a clutter presence signal when said probabilities P1 and P2 are simultaneously greater than Po.

supplying output signals $\vec{S}_1 = \vec{A} + k_1\vec{B}$ and $\vec{S}_2 = k_2(\vec{A} - k_1\vec{B})$ where k_1 and k_2 are amplitude and phase modifying complex coefficients;

limiting circuits connected to the outputs of said operating circuit;

90° phase shifting means connected to the output of one of said limiting circuits;

demodulating means having two inputs respectively connected to the output of said 90° phase shifting means for demodulating one of said signals S_1 and S_2 in phase quadrature, by the other;

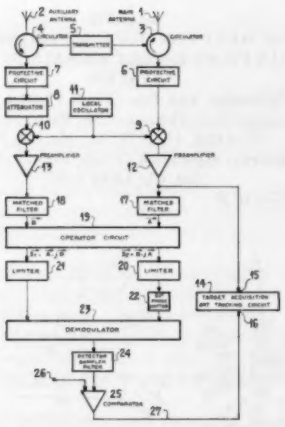
means for comparing the demodulation signal with a reference signal and for supplying a suppression control signal when said reference signal is exceeded.

4,143,372

SIDE-LOBE BLANKING ARRANGEMENT FOR A RADAR SYSTEM

Laurence Salvaudon, and Jean-Claude Charlot, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Sep. 29, 1977, Ser. No. 837,861
Claims priority, application France, Oct. 5, 1976, 76 29895
Int. Cl.² G01S 9/22, 7/66
U.S. Cl. 343—16 M **2 Claims**



1. In a radar system with a main antenna array of the monopulse type, an arrangement for suppressing the echos received in the side lobes of said main antenna of said radar system, said arrangement comprising;

an auxiliary antenna whose radiation diagram overlaps with the side lobes of the main antenna;

an operating circuit for receiving a signal $\vec{A}$ from the main antenna and a signal $\vec{B}$ from the auxiliary antenna and for

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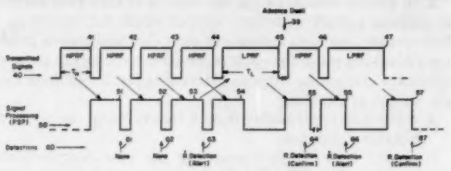
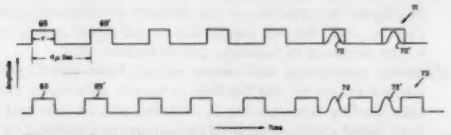
4,143,373

ADAPTIVE RADAR SYSTEMS AND METHODS THEREFOR

Leon Chernick, Encino, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Sep. 21, 1977, Ser. No. 835,101
Int. Cl.² G01S 9/10
U.S. Cl. 343—17.1 PF **10 Claims**





1. The method of measuring the range and range rate of a target, comprising the steps of:

(1) transmitting a train of energy pulses of at least one preselected high PRF waveform which has a sufficiently high PRF value as to produce unambiguous range rate data for said target from a train of pulses of a single such high PRF, and measuring the range rate of the target from energy returned therefrom;

(2) determining, as a function of said range rate measured in step (1) a low PRF waveform which has a sufficiently low PRF value as to produce unambiguous range data for said target from a train of pulses of a single such low PRF, and which will produce target return signals at preselected relative frequency zones within the spectrum of said low PRF waveform; and

(3) transmitting a train of energy pulses of the low PRF waveform determined in step (2) and measuring the range of the target from energy returned therefrom.

4,143,374

Patent Not Issued For This Number

4,143,375

METHOD AND APPARATUS FOR PREVENTING JAMMING OF LOCATING AND TRANSMISSION SYSTEMS

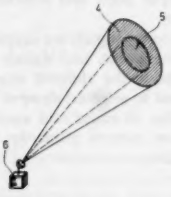
Alois Knopf, Ottobrunn, Fed. Rep. of Germany, assignor to Messerschmitt-Bölkow-Blohm, Fed. Rep. of Germany

Filed May 9, 1977, Ser. No. 795,071

Claims priority, application Fed. Rep. of Germany, May 20, 1976, 2622419

Int. Cl.² G01S 7/36

U.S. Cl. 343—18 E **5 Claims**



1. Apparatus for preventing jamming of locating and transmission systems, transmitting useful signals from an originating station, by a jammer having a limited available jamming power, said apparatus comprising, in combination, signal radiating means, at said originating station, including at least one radiator; means supplying said useful signals to said radiating means; and means supplying, to said radiating means, additional non-processed signals, independent of said useful signals of said locating and transmission system, in an enveloping relation with said useful signals and effective to force the jammer to diminish or shift the density of its spectral jamming output, in which the useful signals are enveloped by the additional signals in a frequency range, said apparatus comprising a frequency-dividing network having an output connected to said signal radiating means and having two inputs; a first transmitter of the useful signals connected to one input of said frequency-dividing network; and a second transmitter of the additional signals separate from said first transmitter, constituted by counter-counter measure signals, connected to the other input of said frequency-dividing network.

4,143,376

METHOD FOR SAMPLING TACAN SIGNAL ENVELOPE

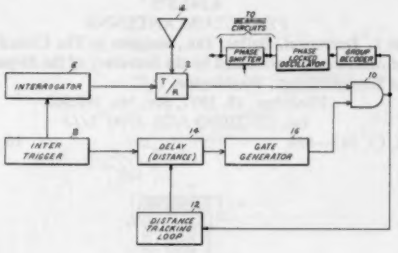
Maurice L. J. Jezo, Cedar Grove, N.J., assignor to International Telephone & Telegraph Corp., Nutley, N.J.

Filed Oct. 11, 1977, Ser. No. 840,943

Int. Cl.² G01S 1/44

U.S. Cl. 343—106 R **3 Claims**

1. An improved method for providing input signal information to the bearing circuits of Tacan airborne equipment of the type which generates interrogation signals which are received by a ground beacon, which in turn transmits to the airborne equipment reply signals in response to the interrogation signals, and wherein samples of the received signal envelope trigger a phase locked oscillator in the airborne equipment, the output of said phase locked oscillator being applied to the



airborne bearing circuitry both before and after phase shifting, wherein the improvement comprises:

detecting those reply signals which were generated by said beacon in response to interrogation by said airborne equipment; and

applying said detected reply signals as said samples to said phase locked oscillator.

4,143,377

OMNIDIRECTIONAL ANTENNA WITH A DIRECTIVITY DIAGRAM ADJUSTABLE IN ELEVATION

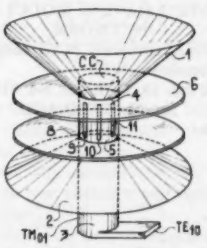
Francois Salvat, and Jean Bouko, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Nov. 28, 1977, Ser. No. 855,232

Claims priority, application France, Nov. 30, 1976, 76 36071

Int. Cl.² H01Q 13/04

U.S. Cl. 343—755 **4 Claims**



1. An omnidirectional antenna having a diagram in elevation whose directivity can be adjusted, comprising two truncated metal cones whose apices face each other, a waveguide feeding the said antenna through the said apices, two discs of dielectric material of predetermined width and of similarly predetermined thickness arranged parallel to the base of the said truncated, cones, and at a predetermined distance from their respective apices, determining in said antenna, two parts in which the energy is propagated, a first part termed a central part in which the energy is propagated through said discs, a

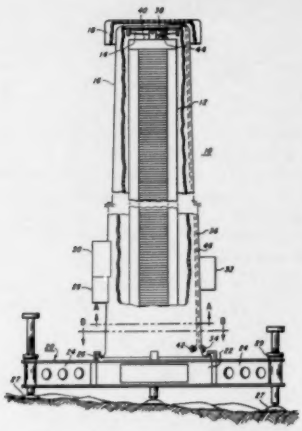
second part outside said discs, said discs differently altering the propagation of energy in said parts, resulting in the radiating aperture of said antenna, in a reduction of the phase differences between the central part of said radiating aperture and its edges.

4,143,378

PENDULUM ANTENNA

John L. Darrouzet, Dallas, Tex., assignor to The United States of America as represented by the Secretary of the Department of Transportation, Washington, D.C.

Filed Apr. 18, 1977, Ser. No. 788,565
Int. Cl.[2] H01Q 3/26, 3/00, 1/12
U.S. Cl. 343—854 **16 Claims**



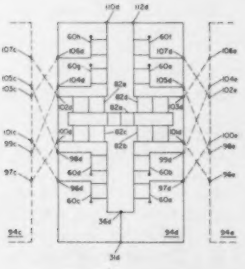
1. An elevation scanning antenna comprising:
(a) a shroud;
(b) a gimbal means mounted in said shroud; and
(c) an array antenna aperture suspended from said gimbal means, said gimbal means supporting said array antenna aperture in a manner to overcome motion induced by extraneous forces such as long-term ground movement or aerodynamic forces.

4,143,379

ANTENNA SYSTEM HAVING MODULAR COUPLING NETWORK

Harold A. Wheeler, Smithtown, N.Y., assignor to Hazeltine Corporation, Greenlawn, N.Y.

Filed Jul. 14, 1977, Ser. No. 815,617
Int. Cl.[2] H01Q 3/26
U.S. Cl. 343—854 **14 Claims**



1. An antenna system for radiating wave energy signals into a selected angular region of space and in a desired radiation pattern, comprising:

an aperture comprising a plurality of antenna element modules, each module comprising a pair of element groups, each group comprising one or more radiating antenna elements, said element modules and element groups being arranged along a predetermined path;

and a plurality of coupling networks each associated with one of said element modules, each of said coupling networks having an input port, a pair of output ports each connected to the antenna elements of one of the associated element groups, cross-coupling ports connected to the coupling networks associated with the adjacent element modules along said path, first coupling means interconnecting said input port and said output ports, second coupling means interconnecting said input port and selected ones of said cross-coupling ports and third coupling means, independent of said second coupling means, interconnecting said output ports and selected ones of said cross-coupling ports;

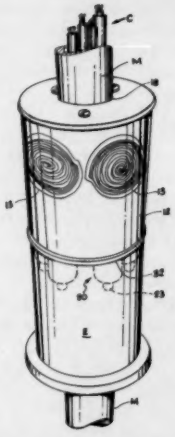
whereby when wave energy signals are supplied to the input port of any of said networks, said signals are coupled to the antenna elements in the element module associated with said network and to selected element groups in adjacent element modules, to cause said aperture to radiate said desired radiation pattern primarily within said selected region of space.

4,143,380

COMPACT SPIRAL ANTENNA ARRAY

Robert H. Kyle, Portola Valley, Calif., assignor to EM Systems, Inc., Sunnyvale, Calif.

Filed Apr. 27, 1977, Ser. No. 791,580
Int. Cl.[2] H01Q 3/26, 1/36
U.S. Cl. 343—895 **13 Claims**

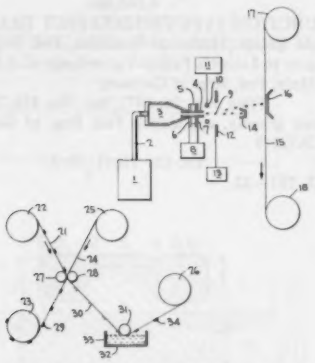


1. A conformal antenna system comprising,
(a) a greater cylinder having an axis, said greater cylinder being transparent to electromagnetic radiation,
(b) a lesser cylinder having an axis, said lesser cylinder being reflective of electromagnetic radiation, said lesser cylinder being of lesser circumference than said greater cylinder and being coaxially positioned within said greater cylinder, said lesser and greater cylinders defining a cavity therebetween,
(c) a plurality of spiral antenna elements conformally positioned on said greater cylinder such that said antenna elements are circumferentially spaced about said axis of said greater cylnnder whereby the cavity and said lesser cylinder are shared by said antenna elements.

4,143,381
METHOD FOR INFORMATION PROCESSING

Robert H. Downie, Williamsville, N.Y., assignor to Moore Business Forms, Inc., Niagara Falls, N.Y.

Filed Sep. 1, 1976, Ser. No. 719,674
Int. Cl.[2] G01D *15/16*
U.S. Cl. 346—1 15 Claims



1. A method of information processing comprising the steps of:

(a) printing information in the form of an ink deposit on the surface of a recording member by non-impact technique, said ink deposit containing a donor material which is spontaneously capable of transferring submolecular matter to form a latent image analog on a dielectric surface pressure-contacted thereagainst when said ink deposit is dry;

(b) drying said printed ink deposit containing said donor material on said surface of said recording material;

(c) pressure contacting said surface of said recording member containing said dried ink deposit thereon with a dielectric surface in order to form a latent image analog on said dielectric surface, said latent image analog being formed by the submolecular matter donated by said donor material; and

(d) detecting said latent image analog on said dielectric surface.

4,143,382
BATTERY OPERATED ELECTRONIC ALPHANUMERIC PERMANENT RECORDING INSTRUMENT, SUCH AS RECORDING POCKET CALCULATOR

Klaus Brill, Korntal; Kurt Hurst, Stuttgart, and Manfred Köder, Gerlingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 11, 1977, Ser. No. 776,853
Claims priority, application Fed. Rep. of Germany, Mar. 16, 1976, 2610936
Int. Cl.[2] G01D *15/10, 9/00*
U.S. Cl. 346—76 R 36 Claims

1. Battery operated electronic alphanumeric permanent recording instrument particularly for association with a calculator comprising

a housing;

an optical readout panel arranged for segmental representation of alphanumeric characters including segmental illuminating means,

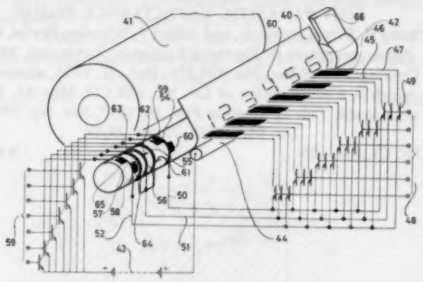
means deriving control signals for illumination of selected illuminating means to form said alphanumeric characters

storage means located on said housing and defining a storage compartment to hold elongated recording paper (**7, 40**) therein;

a recording paper removing position (**8**) to effect withdrawal of recording paper from the storage compartment;

a recording head (**11**) including a plurality of respectively mutually insulated recording electrodes (**23***a*–**23***e;* **45, 46, 47**) and located in recording relationship to the recording paper;

movement control means effecting relative movement between said recording head (**11**) and said recording paper (**7, 40**), recording being effected on said recording paper by said recording head during such relative movement;

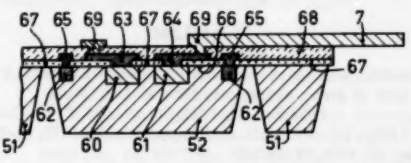


and contact means (**25***a*–**25***e,* **54–58**) coupled to at least some of the segmental illuminating means and energized in accordance with energization of said illuminting means by said control signals, said contact means being in electrical connection with said insulated writing electrodes to energize the writing electrodes in accordance with energization of the illuminating means.

4,143,383
CONTROLLABLE IMPEDANCE ATTENUATOR HAVING ALL CONNECTION CONTACTS ON ONE SIDE

Karel P. Van Rooij; Johannes T. Schrama, and Adrianus W. Ludikhuize, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 643,613, Dec. 22, 1975, abandoned, which is a continuation of Ser. No. 411,762, Nov. 1, 1973, abandoned. This application Sep. 23, 1976, Ser. No. 725,781
Int. Cl.[2] H01L *29/92, 29/72, 29/12*
U.S. Cl. 357—14 14 Claims



1. A controllable impedance attenuator, comprising:

a layer of high-ohmic semiconductor material having a substantially flat major surface;

first and second mutually spaced low-ohmic surface zones of one conductivity type nested in said layer and adjoining said major surface;

a signal input connection contact attached at said major surface to said first surface zone;

a signal output connection contact attached at said major surface to said second surface zone;

a low-ohmic region of the opposite conductivity type nested in said layer, adjoining said major surface and spaced from both said first and said second surface zones;

a signal current path extending within said layer from said first to said second surface zones, said signal current path substantially bypassing said region of opposite conductivity type but being adjacent thereto, said signal current path and first and second surface zones forming two di-

odes connected in series and opposition between said input and output contacts; and

an electrically conductive connection contact attached at said major surface to said region of opposite conductivity type for controlling the impedance of said signal current path adjacent thereto.

4,143,384

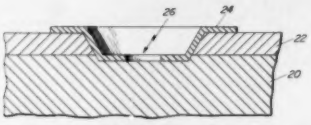
LOW PARASITIC CAPACITANCE DIODE

Chung K. Kim, Lexington, and Alfred J. Wheeler, Berlin, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 639,675, Dec. 11, 1975, abandoned, which is a continuation of Ser. No. 469,173, May 13, 1974, abandoned. This application Feb. 18, 1977, Ser. No. 770,130

Int. Cl.[2] H01L *29/48, 29/06*

U.S. Cl. 357—15 **6 Claims**



1. In combination:

a first layer of gallium arsenide semiconductor material of doping density in the range of 5×10^{15} to 10^{17} /cm^3;

a second layer of gallium arsenide semiconductor material of the same conductivity type as said first layer of doping density below 5×10^{15} /cm^3 contiguous to said first region; and

A Schottky barrier junction in the form of an annulus comprising a layer of schottky barrier junction forming metal extending through a hole in said second layer and contacting said first layer, said layer of Schottky barrier junction forming metal having a bottom portion, sidewall portions, and an upper portion, the outer surface of said bottom portion contacting only said first layer, the juncture between said bottom portion and said sidewall portions being within said first layer and contacting said first layer, at least portions of the outer surface of said sidewall portions contacting said second layer, and said upper portion being of annular shape with the outer surface of said upper portion contacting said second layer.

4,143,385

PHOTOCOUPLER

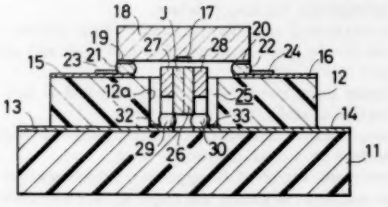
Tadahiko Miyoshi, Hitachi, and Yasutoshi Kurihara, Katsuta, both of Japan, assignors to Hitachi, Ltd., Japan

Filed Sep. 29, 1977, Ser. No. 837,710

Claims priority, application Japan, Sep. 30, 1976, 51/117789; Dec. 25, 1976, 51/157157

Int. Cl.[2] H01L *33/00, 31/12, 31/16*

U.S. Cl. 357—19 **12 Claims**



1. In a photocoupler wherein a semiconductor photoresponsive element and a semiconductor light emitting element are opposed in a hole of an insulating substrate having two groups of electric interconnections in predetermined patterns, the photocoupler characterized in that a P-N junction of said semiconductor light emitting element is arranged perpendicularly to a light receiving face of said semiconductor photoresponsive element, and that at least one of the elements is spliced with the corresponding group of electric interconnections by a brazing material at, at least, three points which lie on an identical plane but do not lie on one straight line.

4,143,386

JUNCTION TYPE FIELD EFFECT TRANSISTOR

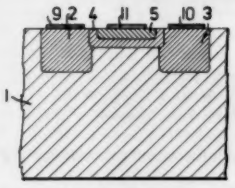
Reinhold Kaiser, Heilbronn-Sontheim, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 28, 1977, Ser. No. 810,753

Claims priority, application Fed. Rep. of Germany, Jul. 3, 1976, 2630079

Int. Cl.[2] H01L *29/80*

U.S. Cl. 357—22 **10 Claims**



1. In a junction-type field-effect transistor having a semiconductor body of a first conductivity type, spaced source and drain regions of the opposite conductivity type extending into said semiconductor body from one major surface of same, a channel region of said opposite conductivity type extending into said semiconductor body from said one major surface and extending along said one major surface from said source region to said drain region, and a gate region of said first conductivity type extending into said channel region from said one major surface, said source region and said drain region extending deeper into said semiconductor body than does said channel region, the improvement wherein said gate region is embedded completely in said channel region in the portion of same between said source region and said drain region except for the portion of said gate region which extends along said major surface.

4,143,387

SIGNAL MIXER INCLUDING RESISTIVE AND NORMAL GATE FIELD-EFFECT TRANSISTOR

Eduard F. Stikvoort, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 8, 1977, Ser. No. 804,576

Claims priority, application Netherlands, Jun. 16, 1976, 7606483

Int. Cl.[2] H01L *29/78*

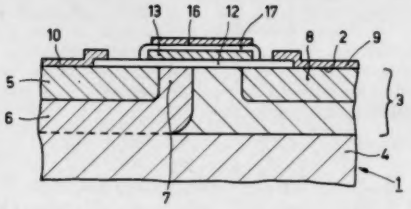
U.S. Cl. 357—23 **18 Claims**

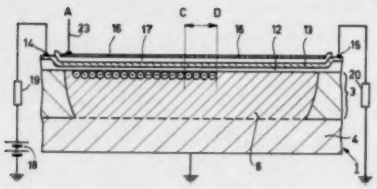
1. A semiconductor device including a first insulated gate field effect transistor and suitable for mixing two signals, comprising a semiconductor body having surface-adjoining source and drain regions of one conductivity type which are separated from each other by an intermediate region of the second conductivity type having therein a surface-adjoining channel region above which a gate electrode, insulated from the semiconductor body by an intermediate insulating layer is situated; wherein as an improvement

the gate electrode comprises two sublayers disposed one above the other, namely a lower gate electrode which is separated from the channel region by a first insulating layer covering the surface of the body and an upper gate electrode which is separated from the channel region by a second insulating layer covering the lower gate electrode,

by the lower gate electrode and by the first insulating layer and further comprising

connection means for applying a voltage drop across the lower gate electrode in a direction substantially parallel to the surface and substantially transverse to the main current direction in the channel region of the transistor and





wherein the transistor, in the absence of a voltage drop across the lower gate electrode, is the type of transistor having insulated gate electrodes which, within a given range of gate voltages has a substantially constant transconductance.

4,143,388

MOS TYPE SEMICONDUCTOR DEVICE

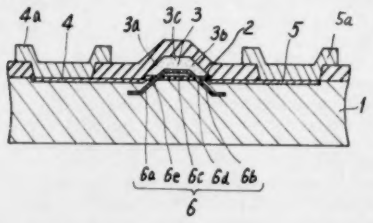
Hideya Esaki; Takashi Hirao, and Hakuhei Kawakami, all of Neyagawa, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed May 17, 1977, Ser. No. 797,835

Claims priority, application Japan, May 18, 1976, 51-57399

Int. Cl.[2] H01L *29/78*

U.S. Cl. 357—23 **20 Claims**



1. A MOS type semiconductor device comprising:

a substrate of a monocrystalline semiconductor of a first conductivity type and a specified impurity concentration,

a pair of spaced apart regions of a second conductivity type formed in said substrate,

a region having a high impurity concentration and formed insulated on a face of said substrate, said region having at least at one end part thereof an oblique face which is oblique to the face of said substrate; and

an ion-implanted layer which has said first conductivity type, higher impurity concentration than that of the substrate and a specified thickness and is disposed under said oblique face, the inclination angle of said ion-implanted layers being dependent on said oblique face, thereby obliquely crossing the face of the substrate at a position just beneath said oblique face.

4,143,389

PHOTOELECTRIC ELEMENT IN A SOLID-STATE IMAGE PICK-UP DEVICE

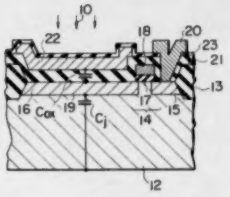
Norio Koike, Musashino, and Masaharu Kubo, Hachioji, both of Japan, assignors to Hitachi, Ltd., Japan

Filed Aug. 11, 1977, Ser. No. 823,646

Claims priority, application Japan, Aug. 16, 1976, 51-97084

Int. Cl.[2] H01L *27/14*

U.S. Cl. 357—31 **7 Claims**



1. A photoelectric element in a solid-state image pickup device comprising:

a field-effect transistor, disposed in one surface portion of a semiconductor substrate of a first conductivity type, including a source region and a drain region having a second conductivity type opposite to said first conductivity type, a gate insulating film provided so as to cover a portion of said substrate lying between said source region and said drain region, and a gate electrode provided on said gate insulating film, one of said source region and said drain region being larger than the other and constituting, together with said substrate, a photodiode;

a transparent insulating oxide film which is provided so as to cover said photodiode; and

a transparent electrode which is provided on said insulating oxide film and which permits at least part of incident light to permeate therethrough, said transparent electrode being maintained at a predetermined voltage and forming an electrostatic capacitance with said one region.

4,143,390

SEMICONDUCTOR DEVICE AND A LOGICAL CIRCUIT FORMED OF THE SAME

Hideo Noguchi, Yokohama, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Dec. 12, 1977, Ser. No. 859,872

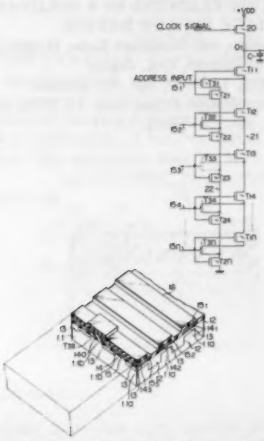
Claims priority, application Japan, Dec. 14, 1976, 51-150204; Dec. 14, 1976, 51-150205

Int. Cl.[2] H01L *27/02*

U.S. Cl. 357—41 **11 Claims**

4. A semiconductor device, comprising: a first-conductivity-type semiconductor substrate; a plurality of first regions formed in matrix arrangement on said semiconductor substrate and having a second-conductivity-type opposite to that of said substrate; a plurality of second-conductivity-type second regions formed on first portions of said semiconductor substrate between said first regions along the a plurality of rows of the matrix arrangement of said second-conductivity-type first regions and arranged in the shape of a matrix; a plurality of gate insulating films formed, along a plurality of columns of the matrix arrangement of said second regions, on said regions and second portions of said semiconductor substrate which are positioned between said second regions along the columns of the matrix arrangement, said gate insulating films having thick portions which are selectively formed on said second portions of said semiconductor substrate; and a plurality of conductive

films respectively formed on said gate insulating films; said first regions and said second regions alternately disposed along said line compositing a plurality of depletion-type MOS transistors, and said second regions and said second portions of the semi-



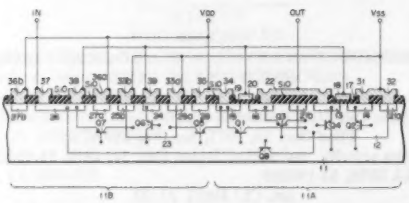
conductor substrate alternately disposed along said column composing a plurality of enhancement-type MOS transistors, said second regions functioning as sources and drains of said enhancement-type MOS transistors as well as channels of said depletion-type MOS transistors.

4,143,391

INTEGRATED CIRCUIT DEVICE

Yasoji Suzuki, Ayase, and Tomohisa Shigematsu, Yokohama, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Continuation of Ser. No. 722,101, Sep. 10, 1976, abandoned. This application Jun. 20, 1978, Ser. No. 917,176
Claims priority, application Japan, Sep. 12, 1975, 50-109940
Int. Cl.[2] H01L *27/02*
U.S. Cl. 357—44 **4 Claims**



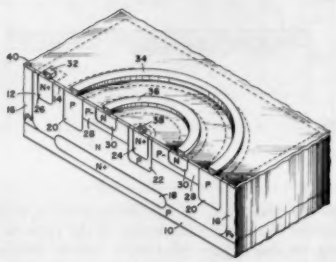
1. An integrated circuit device having an input terminal and formed in a semiconductor substrate of a first conductivity type comprising: a first semiconductor section in said semiconductor substrate in which there is formed a first well region having a second conductivity type opposite to said first conductivity type, complementary MOS elements formed in said first semiconductor section, one inside and one outside said first well region, said MOS elements each having a gate; a second semiconductor section in said semiconductor substrate physically separated from said first semiconductor section, in which there is formed a second well region having said second conductivity type; a first region of said first conductivity type located in said second well region to form a first protective diode between said first region and said second well region and said first region being coupled to said gates of said MOS elements; said second semiconductor section further including a second region of said second conductivity type formed in said substrate and forming a protective input resistance between first and second portions of said second region, said first portion connected to said input terminal and said second portion connected to said gates of said MOS elements and said second region further forming additional protective diodes between said second region and said second semiconductor section, said second region and said second well region both spaced sufficiently wide apart in said second semiconductor section from each other and from said first semiconductor section to prevent the occurrence of a latch-up phenomenon due to the action of lateral parasitic transistors between said first and second semiconductor sections.

4,143,392

COMPOSITE JFET-BIPOLAR STRUCTURE

Steve W. Mylroie, Palo Alto, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.

Filed Aug. 30, 1977, Ser. No. 828,999
Int. Cl.[2] H01L *27/02*
U.S. Cl. 357—43 **14 Claims**



1. A semiconductor device, comprising:
(a) a semiconductor body portion of first type conductivity and having a major surface;
(b) an annular first region of second type conductivity opposite said first type conductivity and extending from said major surface into said body portion;
(c) a second region of said second type conductivity located within a region of said body portion circumscribed by said annular first region and extending to said major surface;
(d) an annular third region of said second type conductivity extending between said first and second regions and extending from said major surface into said body portion a shallower distance than either of said first and second regions;
(e) a zone of said first type conductivity within said second region and extending to said major surface;
(f) means separated from said first and second regions, surrounding said second region and forming a semiconductor junction with a surface portion of said annular third region; and
(g) contact means conductively connected separately to said body portion, said annular first region, said zone, and said semiconductor junction-forming means.

4,143,393

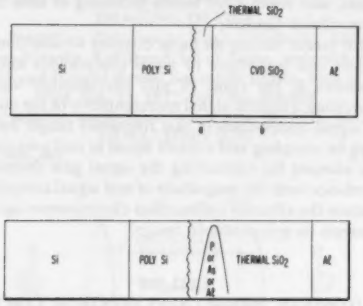
HIGH FIELD CAPACITOR STRUCTURE EMPLOYING A CARRIER TRAPPING REGION

Donelli J. DiMaria, Mt. Kisco, and Donald R. Young, Ossining, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 21, 1977, Ser. No. 808,500
Int. Cl.[2] H01L *29/34*
U.S. Cl. 357—52 **14 Claims**

1. A high field capacitor structure comprising:
a pair of spaced-apart electrodes; and
an insulating layer dispersed between said pair of electrodes,

said insulating layer having a carrier trapping region therein, wherein one of said electrodes is a substrate and the insulating layer is an oxide of the substrate, the interface between the substrate and the oxide having asperities



which tend to produce localized high fields, said carrier trapping region being closely adjacent said interface and readily charged to reduce the large localized fields due to the asperities.

4,143,394

SEMICONDUCTOR LUMINESCENCE DEVICE WITH HOUSING

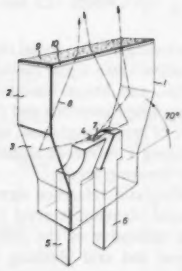
Werner Schöberl, Massenbachhausen, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 20, 1977, Ser. No. 817,518

Claims priority, application Fed. Rep. of Germany, Jul. 30, 1976, 2634264

Int. Cl.[2] H01L *23/28, 33/00*

U.S. Cl. 357—72 **12 Claims**



1. In a semiconductor luminescence component including a light-transmissive casing having an end surface serving as a light outlet surface, and a semiconductor light-emitting element cast in said casing opposite said light outlet surface, the improvement wherein said casing has an upper casing part adjacent said light outlet surface followed by a lower casing part in which said semiconductor element is located; wherein said upper casing part has a constant cross section; and wherein the side wall of said casing extends, in said lower casing part, at such an angle to the light rays escaping laterally from the semiconductor element and falling on the casing side wall, that the light falling there is reflected back into the casing in a direction towards said casing end surface serving as a light outlet surface.

4,143,395

STUD-TYPE SEMICONDUCTOR DEVICE

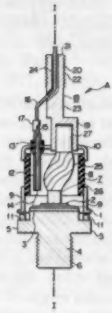
Toshinobu Sekiba, Yokohama, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Continuation of Ser. No. 732,969, Oct. 15, 1976, abandoned.

This application May 22, 1978, Ser. No. 908,530

Int. Cl.[2] H01L *23/42, 23/44, 23/46*

U.S. Cl. 357—79 **17 Claims**



1. A semiconductor device comprising:

a semiconductor element having at least three semiconductor areas corresponding to first, second and third semiconductor areas;

a first electrode connecting means comprising a solid cylindrical electroconductive stud having a first end and a second end, said stud second end being electrically connected to said first semiconductor area;

a housing comprising a hollow body having a closed end and an open end connected to said first electrode connecting means and surrounding said semiconductor element;

a second electrode connecting means comprising a rigid electroconductive body extending outwardly of the housing, said rigid electroconductive body having a free end and a base end connected to the closed end of said housing in a position deviated from the axis of said first electrode connecting means, said rigid electroconductive body further comprising a section including said base end and a cylindrical section including said free end and situated concentrical with said first electrode connecting means, and a through hole extending from the side surface thereof toward said free end while passing at least through the center axis of said cylindrical section;

a third electrode connecting means comprising a flexible electroconductive body extending outwardly of said housing and having a first free end and a second end connected to the closed end of said housing in a position deviated from the center axis of said first electrode connecting means, said flexible body electrically insulatingly passing through the through hole of said second electrode connection means, the free end of said third electrode connecting means extending from the free end of said second electrode connecting means;

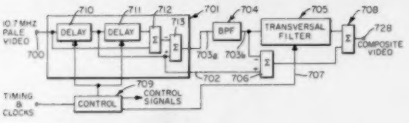
a first lead electrically connecting said second semiconductor area to said second electrode connecting means; and

a second lead electrically connecting said third semiconductor area to said third electrode connecting means.

4,143,396
DIGITAL CHROMINANCE SEPARATING AND PROCESSING SYSTEM AND METHOD

Robert P. MacKenzie, Menlo Park, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Continuation of Ser. No. 763,251, Jan. 26, 1977, abandoned. This application Feb. 4, 1977, Ser. No. 765,563
Int. Cl.[2] H04N 9/00
U.S. Cl. 358—8 **32 Claims**



1. A digital chrominance separating and processing system for enabling the digital reproduction of the four color fields of a composite color television signal from a selectively stored single frame or field, wherein the chrominance signal is incompletely extracted from the stored video as at given color edges of the video picture, the combination comprising;

digital chrominance conditioning means for receiving the extracted chrominance and for digitally rotating the phase thereof from the nominal on alternate repetitive reproductions of the stored video, the degree of chrominance desaturation at the color edges of the television picture being commensurate with said rotation; and

digital recombining means for reconstituting the reproductions with blending color edges of the video picture on alternate reproductions.

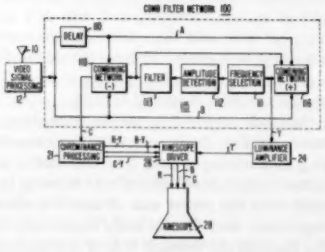
30. In a digital chrominance separating and processing system for digitally reproducing a composite color television signal from a selectively stored single frame or field, including filter means for separating the chrominance signal from the stored video, and re-combining means for reconstituting the composite color television signal, the improvement comprising;

digital circuit means for digitally effecting an inversion of the separated chrominance on alternate repetitive reproductions of the stored video.

4,143,397
COMB FILTER APPARATUS

David D. Holmes, Trenton, N.J., assignor to RCA Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 678,394, Apr. 19, 1976, abandoned. This application Mar. 17, 1977, Ser. No. 778,594
Int. Cl.[2] H04N 9/535
U.S. Cl. 358—31 **10 Claims**



1. Apparatus for processing a video signal containing image-representative luminance and chrominance components disposed within a frequency spectrum of said video signal in frequency interleaved relation, said chrominance component alternating in phase each horizontal line scanning interval, said apparatus comprising:

comb filtering means including means for delaying said video signal for a time period corresponding to said interval, and means for additively and subtractively combining said video signal and said delayed video signal, to provide relatively separated luminance and chrominance components, said comb filter means including at least one gain controllable element;

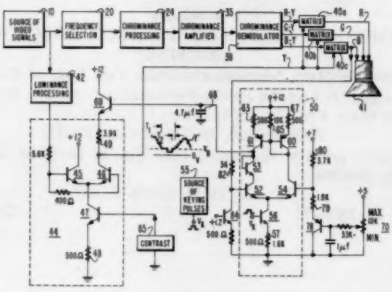
control means having an input coupled to said comb filter means and responsive to signal components having frequencies in the range of said chrominance signals for providing a control signal representative of the magnitude of signal components in said frequency range; and

means for coupling said control signal to said gain controllable element for controlling the signal gain thereof in accordance with the magnitude of said signal components to reduce the effect of uncancelled chrominance signal components on a reproduced image.

4,143,398
AUTOMATIC BRIGHTNESS CONTROL CIRCUIT EMPLOYING A CLOSED CONTROL LOOP STABILIZED AGAINST DISRUPTION BY LARGE AMPLITUDE VIDEO SIGNALS

Leopold A. Harwood, Bridgewater, and Erwin J. Wittmann, North Plainfield, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Mar. 22, 1978, Ser. No. 888,932
Int. Cl.[2] H04N 5/16, 9/535
U.S. Cl. 358—34 **15 Claims**



1. In a system including a video signal channel for processing an image representative video signal having periodically recurring image intervals, and image blanking intervals disposed between succeeding image intervals and containing a blanking level determinative of image brightness, apparatus comprising:

means for providing a reference signal representative of a desired image blanking level;

means for sampling said reference signal and said blanking level during said blanking interval to provide an output control signal indicative of the difference between said reference signal and said blanking level; said sampling means including an active current conducting device for normally conducting current in a given direction during sampling intervals, and having an input supplied with said video signal and an output for providing said control signal;

means coupled to said output of said active device for storing said control signal during said image interval;

circuit means coupled between said active device and said storing means for permitting current conduction of said active device in said given direction with respect to said storing means during sampling intervals, and for inhibiting current conduction of said active device in an opposite direction with respect to said storing means during intervening intervals; and

means for coupling said stored control signal from said

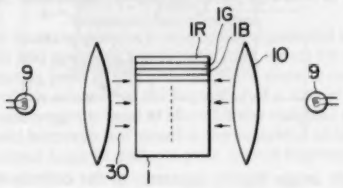
storing means to said channel, for varying said blanking level in a direction to reduce said difference to a minimum.

4,143,399

IMAGING DEVICE

Shusaku Nagahara, Kokubunji; Kenji Takahashi, Ebina, and Mamoru Nonaka, Kokubunji, all of Japan, assignors to Hitachi, Ltd. and Hitachi Denshi Kabushiki Kaisha, both of, Japan

Filed Jun. 15, 1977, Ser. No. 806,854
Claims priority, application Japan, Jun. 18, 1976, 51-71141
Int. Cl.[2] H04N *9/07*
U.S. Cl. 358—44 **8 Claims**



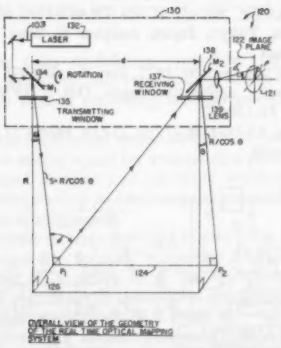
1. An imaging device having a color selective stripe filter and means for applying a bias-light adapted to apply a light of a predetermined intensity, irrespective of the light from an object, onto a photo-converting portion of the imaging device so as to reduce the lag in said imaging device, characterized in that said means for applying bias-light are adapted to apply a bias-light from a light source to said photo-converting portion as a light substantially in parallel with the longitudinal direction of said color selective stripe filter.

4,143,400

REAL-TIME OPTICAL MAPPING SYSTEM

Paul J. Heckman, Jr., Rancho Santa Fe, and Peter D. McCardell, San Diego, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 3, 1977, Ser. No. 773,878
Int. Cl.[2] H04N *3/08*
U.S. Cl. 358—95 **10 Claims**



1. An optical system, to be used with a light source, for mapping objects located in an underwater environment, comprising:

a first optical means, adapted to receive light from the light source, for transmitting the light produced by the light source to the object area to be mapped, thereby illuminating the area; and

a second optical means comprising:

an input means, adapted to receive reflected light from the illuminated object area, or plane;

an output means for conformally transforming, that is, conformally mapping, images of all objects in the object plane to an image plane located externally of the second optical means; and

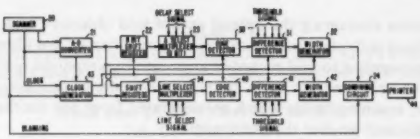
means, disposed between the second optical means and the image plane, for masking light propagating between the optical means and the image plane, the masking means having a circular configuration.

4,143,401

SYSTEM FOR GENERATING LINE DRAWING OF A SCANNED IMAGE

John W. Coviello, Baltimore, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 7, 1977, Ser. No. 813,561
Int. Cl.[2] H04N *1/22, 5/14, 5/79*
U.S. Cl. 358—96 **9 Claims**



1. A system for scanning an image to produce a line drawing with the lines of said drawing representing changes in the gray scale of said image, comprising:

a. scanning means for scanning said image to produce a video signal comprising a plurality of lines;

b. digitizing means for sampling and digitizing said video signal at predetermined intervals to generate a plurality of digital numbers with each of said digital numbers representing the amplitude of said video signal at the corresponding sampling time;

c. storage means for storing a plurality of said digital numbers;

d. first means for comparing each of said digital numbers to a first selected digital number read from said storage means to generate a first difference signal indicative of a change in the gray scale of said image in a direction perpendicular to scanning;

e. means responsive to said first difference signal to generate a print signal of constant amplitude and a selected duration; and

f. printer means responsive to at least said first print signal to print first a line segment corresponding to said first print signal.

4,143,402

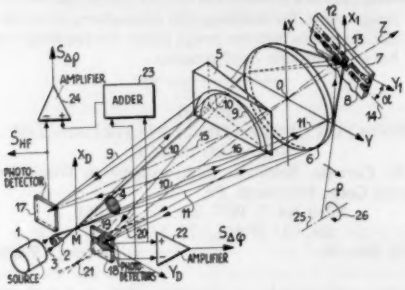
SYSTEM FOR THE OPTICAL READ-OUT BY REFLECTION OF A DATA CARRIER USING HALF BEAMS

Claude Bricot, and Jean C. Lehureau, both of Paris, France, assignors to Thomson-Brandt, Paris, France

Filed May 28, 1976, Ser. No. 691,215
Claims priority, application France, Jun. 3, 1975, 75 17262
Int. Cl.[2] H04N *5/76;* G11B *7/12*
U.S. Cl. 358—128 **18 Claims**

1. An optical system for the read-out, by reflection, of a data carrier which comprises within a recorded area a track of substantially constant width along which a physical characteristic of said data carrier is modulated in accordance with a signal carrying said information, said system comprising: a radiation source supplying radiation, an objective lens arranged for causing said radiation to converge on said track, photodetector means provided for detecting at least a fraction of said radiation reflected by said recorded area and picked up

by said objective lens; said system further comprising: optical deflecting means with flat principal faces, arranged between said radiation source and said objective lens for splitting the illuminating beam delimited by the aperture of said objective lens into halves separated from one another by a plane of



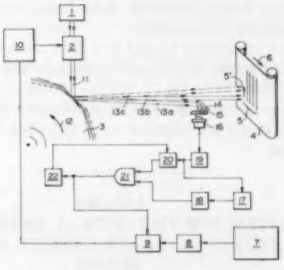
section containing the optical axis of said objective lens; said optical deflecting means causing the splitting of the illumination supplied to said recorded area, into two separate read-out spots; said read-out spots, during the transfer of said data carrier, scanning bands which are separated from one another by a distance smaller than said width.

4,143,403

LIGHT BEAM SCANNING SYSTEM

Masahiro Ohnishi, Sayama, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Mar. 8, 1977, Ser. No. 775,588
Claims priority, application Japan, Mar. 8, 1976, 51-24786
Int. Cl.[2] H04N *5/84*
U.S. Cl. 358—206 **8 Claims**



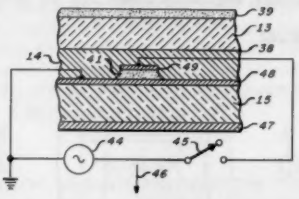
1. A light beam scanning system in which scanning lines are formed by deflecting a beam of light with a rotating multi-face mirror, said system comprising light detecting means within the field of the deflected light at a position corresponding to a position in the vicinity of the beginning point of said scanning lines for detecting the light beam deflected by each face of said rotating multi-face mirror and for producing a generator disabling signal during the period that said light beam is detected, and means for generating video clock pulses, said means being disabled in response to said disabling signal and being enabled upon the lapse of a time the length of which is fixed within a small degree of tolerance after the termination of said disabling signal.

4,143,404

LAMINATED FILTER-ELECTROLUMINESCENT RECITULAR INDEX FOR CATHODE RAY DISPLAY

James B. Armstrong, Phoenix, and J. Robert Trimmier, Glendale, both of Ariz., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Feb. 17, 1978, Ser. No. 878,860
Int. Cl.[2] H04N *5/72*
U.S. Cl. 358—253 **20 Claims**



1. Bright image display apparatus of the cathode ray tube kind having a viewing face with a predetermined spectral emission characteristic when energized comprising:

contrast enhancement filter means on said viewing face having an optical band pass related to said predetermined spectral emission characteristic for absorbing scattered light emissions from said viewing face and rendering said image readily visible under high and low ambient light conditions,

graticule index means associated with said filter means comprising first and second electrode means, at least one of said electrode means being transparent and at least one of said electrode means forming narrow gap means with the other electrode means, said gap having a predetermined generally lineal graticule pattern,

electroluminescent means disposed within said gap means, said electroluminescent means having a reflectance characteristic rendering it visible by reflected light under high ambient light conditions, and

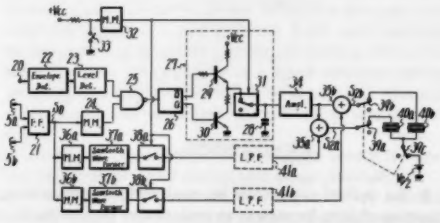
means for applying a voltage between said transparent electrode means for exciting said electroluminescent means and rendering said graticule pattern visible under low ambient light conditions.

4,143,405

AUTOMATIC HEAD SCAN TRACKING SYSTEM

Yukio Kubota, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sep. 30, 1977, Ser. No. 838,375
Claims priority, application Japan, Oct. 5, 1976, 51-120114; Oct. 7, 1976, 51-120657
Int. Cl.[2] G11B *21/10, 21/18;* H04N *5/78*
U.S. Cl. 360—10 **10 Claims**



1. In an apparatus for reproducing video signals recorded on a magnetic tape in successive parallel tracks formed obliquely thereon including a magnetic head mounted on a drum rotatable to scan said head across said tape; a head scan tracking system comprising;

bi-morph leaf means mounting said magnetic head on said drum for movement by a deflection signal applied thereto in either direction transverse to the direction of scan of said head across said tape;

means for generating a sawtooth signal having a predetermined slope;

means for applying said sawtooth signal to said bi-morph leaf means as said deflection signal to deflect said bi-morph leaf means in correspondence with said predetermined slope and thereby cause the direction of the head scan across said tape to coincide with the direction of a recorded track;

positional signal generating means for producing timing signals indicating the rotational position of said magnetic head with respect to the beginning of a scan of said tape; and

circuit means responsive to said timing signals and associated with said sawtooth signal generating means for adjusting the starting point of said predetermined slope to occur sufficiently in advance of the beginning of a scan of said tape by said magnetic head to allow for any transient vibrations in said bi-morph leaf means at the beginning of said predetermined slope to dissipate prior to said beginning of said scan.

4,143,406

PCM RECORDING AND REPRODUCING SYSTEM

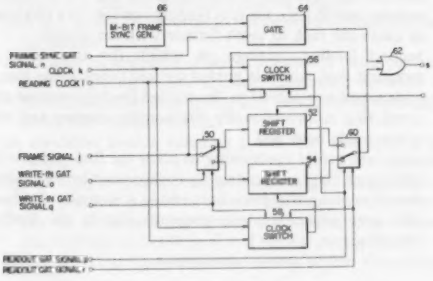
Takehiko Tsuiki; Ken Onishi; Yoshinobu Ishida, and Kazuhiro Chiba, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 22, 1977, Ser. No. 826,819

Claims priority, application Japan, Aug. 27, 1976, 51-102776

Int. Cl.[2] G11B *5/09*

U.S. Cl. 360—48 **4 Claims**



1. A pulse code modulation recording and reproducing system for recording and reproducing at least one analog signal in and from a recording medium including N tracks comprising:

a pulse code modulation means adapted for receiving said at least one analog signal for generating a pulse code modulation signal consisting of a series of words each having B bits corresponding to one sampled magnitude of said at least one analog signal;

a frame former means connected to said pulse code modulation means for forming successive frames each frame consisting of S words of B bits corresponding to one sampled magnitude of said at least one analog signal and a code error check block of R bits;

a frame distributor means connected to said frame former means for successively and repeatedly distributing said frames into N channels, one channel corresponding to each of said N tracks of said recording medium;

a pulse code modulation signal conversion means connected to said frame distributor means, having N channels, each channel connected to a respective one of said N channels of said frame distributor means for changing the transfer speed of said frames to a decreased transfer speed, for providing each frame with a frame synchronizing signal of M bits preceeding said frame for identifying the frame and for generating an output signal in an offset frame arrangement satisfying the relationships

$$m = (B \times S + R - m')/(N - 1) \text{ and } M = m - m'$$

where m is the number of bits by which the leading bit of said frame synchronizing signal of one channel preceeds the leading bit of said frame synchronizing signal of the next adjacent channel and m' is the number of bits equal to the temporal spacing between the trailing bit of said frame synchronizing signal of one channel and the leading bit of the frame synchronizing signal of the next adjacent channel; and

a plurality of modulation and recording means, one connected to each of said N channels of said pulse code modulation signal conversion means for modulating and recording the output of said pulse code modulation signal conversion means on a corresponding track of said recording medium.

4,143,407

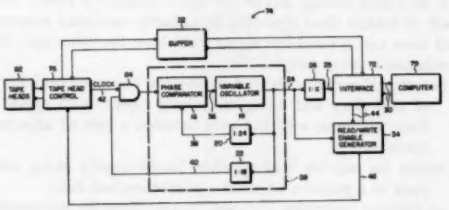
MAGNETIC DATA STORAGE AND RETRIEVAL SYSTEM

R. John Liberty, Playa Del Rey, Calif., assignor to TRW Inc., Los Angeles, Calif.

Filed Jun. 17, 1977, Ser. No. 807,578

Int. Cl.[2] G11B *5/09*

U.S. Cl. 360—51 **6 Claims**



1. In a multitrack magnetic tape data recording and playback system in which a clock reference signal is prerecorded on one track of said tape, and in which data can be recorded or read back from at least one other track, the improvement comprising:

clock recovery means, including a pickup head associated with said one track, for recovering a clock pulse each time a clock reference signal is sensed by said pickup head,

a variable oscillator operating at a frequency higher than the recovered clock pulse rate,

phase lock loop means including a divider for dividing the oscillator output by n, where n is the nominal multiple of the clock pulse rate at which said oscillator operates, and a phase comparator for comparing said recovered clock pulses with the output of said divider, said comparator providing in response to such comparison an error signal to said variable oscillator to adjust the frequency thereof until said oscillator frequency is n times that of the recovered clock pulse rate,

enable gate means, responsive to the output pulses from said oscillator, for providing a read/write enable signal beginning a first fixed number of oscillator output pulses after occurrence of a recovered clock pulse and ending at a second fixed number of oscillator output pulses after occurrence of a recovered clock pulse, and

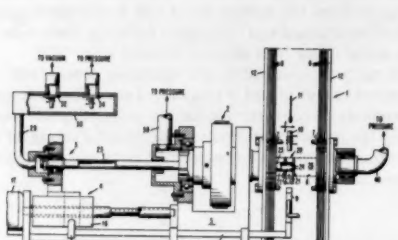
tape head control means for enabling data to be recorded on or read back from said at least one other track at any time during occurrence of said read/write enable signal, but at no other time.

4,143,408

EXTERNAL SELECTOR AND INTERNAL CONTROLLER FOR FLEXIBLE DISC STACK

Bernard W. McGinnis, and James A. Weidenhammer, both of Poughkeepsie, N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Nov. 28, 1977, Ser. No. 855,539
Int. Cl.[2] G11B 5/60, 5/82
U.S. Cl. 360—98 10 Claims



1. In a data storage device having a cylindrical rotary disc pack of flexible discs separated by radially ventilated spacers, said discs and spacers having an axial bore therethrough, the combination comprising:

an external actuator located adjacent to the outer periphery of said discs and being selectively operable to apply a force to create a partial split between a pair of adjacent discs;

means for moving said actuator longitudinally along said pack to a position adjacent a predetermined disc;

an internal controller disposed in said bore for movement therealong and having a pair of spaced plates extending transversely across said bore, said plates dividing said bore into an interior zone between said plates and into exterior zones outside of between said plates, said plates being spaced along the axis of said pack a distance sufficient to permit only one full stable separation between adjacent discs located radially outwardly of said interior zone;

means for moving said controller along said bore to a position where said interior zone is aligned directly radially inwardly of said actuator;

and means for controlling the flow of air through said pack comprising

first means for delivering air to said exterior zones at above-bistable pressures to create above-bistable conditions relative to those discs located radially outwardly of said exterior zones,

and second means selectively switchable between first and second controlling conditions for delivering air to said interior zone respectively at first and second pressures to respectively create an above-bistable condition and a lower pressure condition;

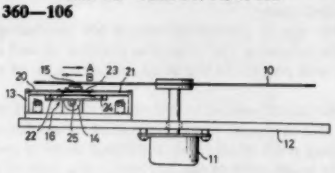
said second means being operable, when said interior zone is aligned radially inwardly of said actuator and said actuator is adjacent said predetermined disc, to allow said actuator to create said partial split at said predetermined disc when said second means is in said first controlling condition, and to cause such partial split to open, upon switching said second means from said first to said second controlling condition, into a full stable split permitting accessing of said predetermined disc.

4,143,409

TRANSDUCER FEEDING MECHANISM IN AN APPARATUS FOR RECORDING AND REPRODUCING A SIGNAL ON AND FROM A ROTARY RECORDING MEDIUM

Yoshitaka Iwabuchi, Yamato; Seiichi Takashima, Ayase, and Togo Nishiyama, Yokohama, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Aug. 23, 1977, Ser. No. 827,023
Claims priority, application Japan, Aug. 26, 1976, 51-101950
Int. Cl.[2] G11B 21/08, 5/012
U.S. Cl. 360—106 9 Claims



1. A transducer feeding mechanism in an apparatus for recording and reproducing a signal on and from a rotary recording medium by means of a transducer fed over the recording medium in the radial direction thereof, said mechanism comprising:

a rotational motive power source having a rotary shaft and a pinion provided on the shaft;

a rack meshed with said pinion and fed in translational movement by the rotation of the pinion;

at least two guide bars extending parallelly in the direction of feeding of the transducer;

a first feeding carriage on which the rack is mounted, and which is guided by one of the guide bars;

biasing means provided on the first feeding carriage and functioning to contact another guide bar in an elastic manner and to urge the first feeding carriage in a direction to cause the rack to mesh further with the pinion;

a second feeding carriage on which the transducer is mounted, and which is guided by said other guide bar;

a guide member mounted on the second feeding carriage and contacting in a rotationally displaceable manner said one of the guide bars; and

engagement means functioning to place the first and second feeding carriages in contacting engagement in the feeding direction along the guide bars and in a mutually displaceable state within a plane perpendicular to the feeding direction.

4,143,410

ELECTRIC POWER SYSTEM CONTROL UTILIZING LOW LEVEL SIGNALS AND MINIATURE GAGE WIRING

Michael J. Cronin, Sherman Oaks, Calif., assignor to Lockheed Aircraft Corporation, Burbank, Calif.

Filed Dec. 30, 1976, Ser. No. 755,557
Int. Cl.[2] H02H 3/08
U.S. Cl. 361—93 7 Claims

1. An electrical control system for an airplane containing an electric power source comprising:

a plurality of electrical load devices at spaced locations in the airplane;

power conductor means extending from said power source to said locations;

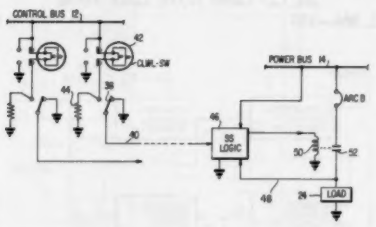
a controller at each said location including switch means operable to connect the load device thereat in an energizing circuit from said power conductor means and solid state means responsive to a control signal of predetermined polarity to operate the switch means;

a voltage source of said predetermined polarity;

control means including a plurality of switch means each selectively operable to apply said control signal from said

voltage source to a control conductor extending to each of said solid state means;

means in each of said controllers responsive to a change in current in the associated load energizing circuit due to a fault to neutralize a control signal on the control conductor extending to the solid state means; and



an incandescent lamp in the circuit between said voltage source and each control switch means to provide an indicating light when a control signal on the control conductor connected through said switch means is neutralized.

4,143,411

ARCHITECTURAL LIGHTING APPARATUS

Thomas E. Roberts, 4501 N. Western, Oklahoma City, Okla. 73118

Filed Jan. 7, 1977, Ser. No. 757,467
Int. Cl.² F21S *1/02*
U.S. Cl. 362—145 **12 Claims**

1. Illumination apparatus combining a lighting element and retaining structure, comprising:

transparent tubular means of selected length;

first and second buss wires extending throughout said tubular means;

a plurality of segments of series-connected plural incandescent lamps with each segment connected between said first and second buss wires, said lamps being equi-spaced along said tubular means;

an electrical source energizing said first and second buss wires;

rigid seating means of selected length and uniform cross-section which is formed to have a retaining cavity for receiving, in continuous contacting disposition, approximately one-half the circumfery of said tubular means therein; and

means for securing said tubular means within the retaining cavity.

4,143,412

LIGHTING FIXTURE, FOR A TAIL, WARNING OR SIGNAL LIGHT

Knut O. Sassmannshausen, 5, Pinewood Estate, Wexford, Ireland

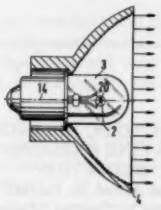
Filed Jun. 21, 1977, Ser. No. 808,728
Claims priority, application Fed. Rep. of Germany, Jun. 24, 1976, 2628243; Oct. 22, 1976, 2647889
Int. Cl.² F21V *7/00*
U.S. Cl. 362—297 **31 Claims**

1. Lighting fixture comprising a concave reflector having a given focal region and an axis, and means at least partly disposed in said focal region for supplying a source of light thereat reflectible at maximal intensity by said concave reflector generally in direction of said axis thereof and reflectible at decreasing intensity in directions extending from said light source at an increasing angle β relative to the direction of said axis, so that

(a) at $\beta = 1°$, the light intensity is at least 200%,

(b) at $\beta = 2.5°$, the light intensity is at least 150%, and

(c) at $\beta = 5°$, the light intensity is at least 120% of the light intensity at $\beta = 10°$, said concave reflector having a reflective surface formed with a multiplicity of reflecting curved surface portions, the mean height of all thereof



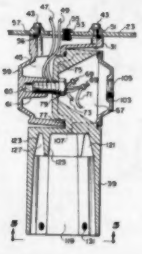
being equal to from 3% to 12% of the mean smallest base diameter of all of said reflecting curved surface portions.

4,143,413

LUMINAIRE MOUNTING ARRANGEMENT

James P. Kelly, Cudahy, Wis.

Continuation of Ser. No. 621,420, Oct. 10, 1975, abandoned. This application Mar. 11, 1977, Ser. No. 776,623
Int. Cl.² F21V *21/00*
U.S. Cl. 362—418 **15 Claims**



1. A mounting arrangement for a floodlight or the like outdoor luminaire having a housing, including in combination:

a first section attachable to said housing of said luminaire, said first section defining a hollow portion and an opening into one side thereof, an internally threaded member being seated in said hollow portion with the free end of said member extending toward said side opening,

a second section releasably connectable to a mounting member having a circular cross section, said second section having integrally formed head and base portions, the head portion defining a chamber in which electrical leads from said luminaire are connectable to lines from a source of electrical power, a trunnion formed on and extending from said head portion, said trunnion being dimensioned for receipt in said side opening of said first section, said trunnion providing support to said first section and luminaire,

a threaded locking bolt passing through said trunnion into said internally threaded member of said first section for securing said first and second sections in selected positions with respect to each other, said sections being rotatable with respect to each other upon loosening said locking bolt for adjusting the angular position of said luminaire attached to said first section,

mating locking ribs provided about said side opening of said first section and said trunnion, respectively, to assist in securing said first and second sections in a selected position,

said base portion including a body defining a cavity for receipt of said mounting member, with a tapered bore at the internal end of said cavity to align and seat the end of said mounting member, and

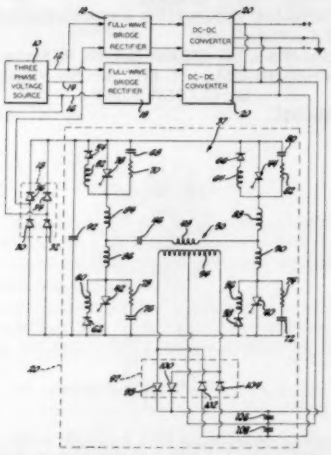
a third section attachable to said second section in covering relation with respect to said cavity, thereby to seal said cavity and electrical leads therein.

4,143,414

THREE PHASE AC TO DC VOLTAGE CONVERTER WITH POWER LINE HARMONIC CURRENT REDUCTION

Roger F. Brewster, and Alfred H. Barrett, both of Santa Barbara, Calif., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 10, 1978, Ser. No. 894,739
Int. Cl.[2] H02M *1/12, 1/14*
U.S. Cl. 363—44 **2 Claims**



1. A three phase AC to DC voltage converter characterized by its low production of source current harmonics comprising, in combination:

a three phase AC voltage source;

first, second and third single phase AC to DC voltage converters, each of said single phase AC to DC voltage converters including:

a first full-wave bridge rectifier effective to convert a respective one of the phases of the three phase voltage source to a first full-wave rectified DC voltage,

an inverter effective to invert the first full-wave rectified DC voltage to an AC voltage, and

a second single phase, full-wave bridge rectifier effective to convert the AC voltage output of the inverter to a second full-wave rectified DC voltage, said inverter and second single phase full-wave bridge rectifier being characterized in that their operation produces harmonic currents including triplen harmonic currents in the respective phase of the three-phase AC voltage source; and

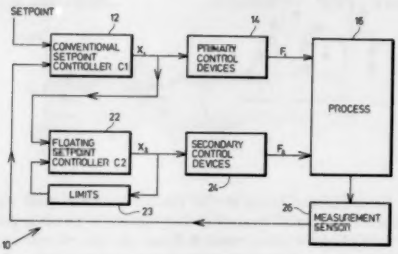
means effective to couple the second full-wave rectified DC voltages from the first, second and third single phase AC to DC voltage converters in parallel to provide an output DC voltage for the three phase AC to DC voltage converter, wherein the triplen current harmonics produced in each phase of the three-phase AC voltage source by a respective one of the single phase AC to DC voltage converters is cancelled by the triplen current harmonics produced in the other two phases of the three phase AC voltage source by the remaining two AC to DC voltage converters.

4,143,415

MULTIPLE CONTROL CIRCUIT WITH FLOATING SETPOINT

Herbert N. Klingbeil, Peterborough, Canada, assignor to Canadian General Electric Company Limited, Toronto, Canada

Filed Oct. 17, 1977, Ser. No. 842,926
Claims priority, application Canada, May 13, 1977, 278398
Int. Cl.[2] G05B *11/18;* G06F *15/46*
U.S. Cl. 364—105 **9 Claims**



1. A method of controlling a system comprising a plurality of control devices by selective on-off switching in order to achieve a desired cumulative output variable within predetermined limits, while automatically selectively controlling the extent of said on-off switching, comprising the steps of

providing a first output from a first plurality of said devices as a primary control effort, using a conventional setpoint primary controller; providing a second variable output from a second plurality of said devices connected effectively in parallel with said first devices; controlling the selection of on-off operation of said second devices by means of a floating setpoint secondary controller; providing a control input to said secondary controller from said first controller; sensing the effect of the cumulative output of said devices, and providing a controlling feed-back in response thereto as an input to said first controller.

4,143,416

NUCLEAR REACTOR AND PRODUCTION SYSTEMS WITH FLUX-OPTICAL DIGITIZER

Paul P. Luger, and Joseph P. Nealen, both of Spokane, Wash., assignors to The Pioneer Educational Society, Portland, Oreg.

Continuation-in-part of Ser. No. 563,158, Mar. 28, 1975, abandoned, Ser. No. 32,578, Apr. 28, 1970, Pat. No. 3,875,410, Ser. No. 238,574, Mar. 27, 1972, Pat. No. 3,999,063, Ser. No. 404,180, Oct. 9, 1973, Pat. No. 3,998,694, and Ser. No. 610,190, Sep. 4, 1975, Pat. No. 4,012,199. This application Dec. 8, 1976, Ser. No. 748,406
Int. Cl.[2] G21C *7/00*
U.S. Cl. 364—504 **22 Claims**

20. In a reactor production system, in combination, a flux sensing device called flux-optical digitizer, a control device for controlling said flux, a linkage between said flux sensing device and said control device;

a. said reactor production system producing reactor flux to be measured by said flux-optical digitizer; said reactor flux being proportional to said power level of said reactor production system;

b. said flux-optical digitizer comprised of:

(1) a light chopper whose rotating shaft carries vanes coated with fissionable material;

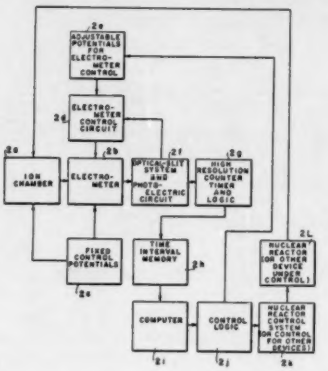
(2) a transducer to change light pulses produced at the optical aperture of the light chopper into electric signals;

(3) a timer-counter to measure the time intervals between said electric signals produced by said transducer;

(4) a storage device for storing digital values of said time intervals;

c. said control device for said reactor production system comprised of:

(1) a motorized control rod so positioned that said control rod may be inserted into the core of said reactor or may be retracted from the core of said reactor;



d. said linkage between said flux sensing device and said control device capable of driving said motorized control rod in response to said digital values of said time intervals.

4,143,417

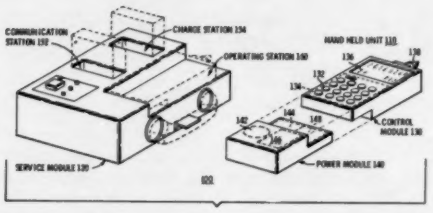
PORTABLE DATA-GATHERING APPARATUS FORMED BY MODULAR COMPONENTS HAVING OPERATE-STANDBY MODES

Gerald R. Wald, Saratoga; Daniel J. Weaver, San Jose; Michael J. Piccardo, Sunnyvale; James B. McLaughlin, Huntington Beach, all of Calif., and Robert Treiber, Centerport, N.Y., assignors to The Singer Company, Binghamton, N.Y.

Filed Oct. 21, 1976, Ser. No. 734,710

Int. Cl.[2] G06F *3/06, 3/04*

U.S. Cl. 364—900 **16 Claims**



1. A system for receiving input data, storing the data, and transmitting the data to a remote terminal, comprising:

a control module for receiving the input data and controlling the flow of the data;

a power-memory module which is removably connected to the control module to form a self-contained self-powered, completely hand-held, one piece unit, the power-memory module contains:

a solid state memory means for storing the data processed thereto by the control module; and

a rechargeable battery for maintaining the status of the data in the memory means and for activating the control module;

a first cover means for housing the control module;

a second cover means separate from the first cover means for housing the memory means and the rechargeable battery together within the power-memory module to prevent disconnection of the rechargeable battery from the memory means during operation;

interconnect means formed through the first and second cover means for electrically and mechanically connecting the control module to the power-memory module and disconnecting the control module from the power-memory module;

mode means in the hand-held unit for maintaining a low power level standby mode in the hand-held unit during the absence of input data, and temporarily establishing an operating mode for processing data as input data becomes available; and

a service module which removably connects with at least the power-memory module for recharging the rechargeable battery and for transmitting the data in the memory means to a remote terminal.

4,143,418

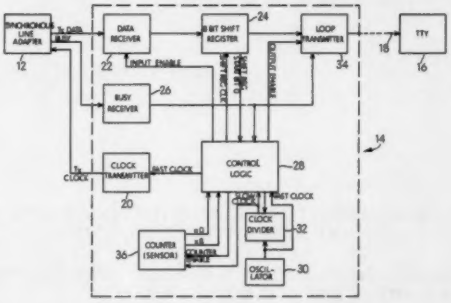
CONTROL DEVICE AND METHOD FOR READING A DATA CHARACTER FROM A COMPUTER AT A FAST RATE AND TRANSMITTING THE CHARACTER AT A SLOW RATE ON A COMMUNICATION LINE

Gordon W. Hodge, and Ted D. Nye, both of Salt Lake City, Utah, assignors to Sperry Rand Corporation, New York, N.Y.

Filed Sep. 21, 1977, Ser. No. 835,130

Int. Cl.[2] G06F *3/04, 5/06*

U.S. Cl. 364—200 **4 Claims**



1. A method of controlling the rate at which data is transferred from a computer to a communication line, comprising the steps of:

(A) generating fast clocks at a first predetermined rate;

(B) generating slow clocks at a second predetermined rate being less than said first predetermined rate at which said fast clocks are generated;

(C) enabling the application of said fast clocks to said computer and to a register to cause the reading in of bits of data from said computer to said register;

(D) monitoring said register to detect the presence of a preselected character of data bits in said register, said character of data bits containing a known number of bits;

(E) disabling said application of said fast clocks to said computer and said register upon the presence of a first said preselected character of data bits being detected in said register;

(F) enabling the application of said slow clocks to said register, upon the presence of the first said character of data bits being detected in said register, to cause the reading out of the first said character of data bits from said register;

(G) transmitting onto said communication line the first said character of data bits read out from said register;

(H) applying said slow clocks to a counter;

(I) enabling said counter to count said slow clocks simultaneous with said enabling of the application of said slow clocks to said register upon the presence of the first said character of data bits being detected in said register; and

(J) monitoring the count of said slow clocks by said counter for

(i) disabling the application of said slow clocks to said register when said counter reaches a first predetermined count equal to said given number of bits contained in said preselected character of data bits indicating that the first said character of data bits has been read out of said register,

(ii) enabling the application of fast clocks to said computer and register to cause, as a repetition of step (C), the reading in of a second said character of data bits from said computer to said register when said counter reaches said first predetermined count, and

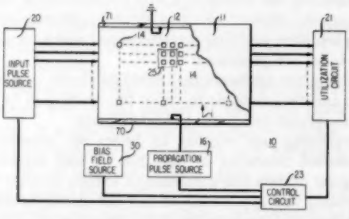
(iii) allowing said application of said fast clocks to said computer and register to be disabled, as a repetition of step (E), should the presence of the second said character of data bits be detected, upon a repetition of step (D), in said register but preventing the enabling of the application of slow clocks to said register to cause, as a repetition of step (F), the reading out of the second said character of data bits from said register and onto said communication line until after said counter reaches a second predetermined count greater than said first count which defines the lapse of a predetermined amount of time sufficient for reflections on said communication line from the transmission of the first said character of data bits to die down.

4,143,419

MAGNETIC BUBBLE MEMORY WITH SINGLE LEVEL ELECTRICALLY-CONDUCTING, DRIVE ARRANGEMENT

Andrew H. Bobeck, Chatham, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 6, 1977, Ser. No. 857,921
Int. Cl.[2] G11C *19/08*
U.S. Cl. 365—19 **10 Claims**



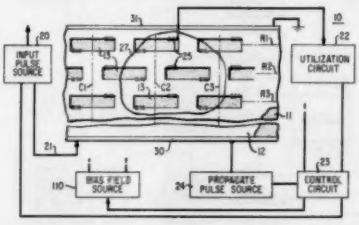
10. A magnetic bubble memory comprising a layer of magnetic material in which magnetic bubbles can be moved, and means for providing rest positions for bubbles in said layer, said memory being characterized by signal-responsive means for providing substantially uniform overall current flow in a plane coupled to said layer, and means for causing a pattern of localized perturbations in said current flow for moving bubbles to positions offset from said rest positions.

4,143,420

CONDUCTOR-ACCESS, MAGNETIC BUBBLE MEMORY

Andrew H. Bobeck, Chatham, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Dec. 6, 1977, Ser. No. 857,925
Int. Cl.[2] G11C *19/08*
U.S. Cl. 365—19 **9 Claims**



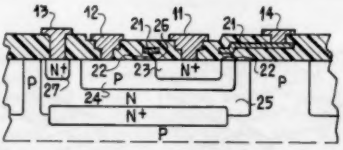
7. A magnetic bubble memory comprising a layer of magnetic material in which magnetic bubbles can be moved, and means for providing rest positions for bubbles along paths of propagation in said layer, said memory being characterized by signal-responsive means for providing substantially uniform overall current flow in first and second directions along said paths in a plane coupled to said layer, and means for causing a pattern of localized perturbation in said current flow for moving bubbles to positions offset from said rest positions.

4,143,421

TETRODE TRANSISTOR MEMORY LOGIC CELL

Eugene Tonnel, and Maurice Depey, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Sep. 6, 1977, Ser. No. 831,049
Claims priority, application France, Sep. 10, 1976, 76 27291
Int. Cl.[2] G11C *11/40*
U.S. Cl. 365—180 **15 Claims**



1. A tetrode transistor memory logic cell, comprising:

a bipolar tetrode type transistor, fitted with terminals connected respectively to the emitter, base and collector regions, which are separated by junctions brought out on the same face of the transistor, and a grid electrode arranged on the same face opposite the said junctions and electrically insulated from the semi-conductor by a layer of dielectric material;

circuits connected to the said terminals, including means for applying electrical quantities temporarily to the said terminals, which ensure simultaneously the application of a polarizing voltage of one sign or the other to the grid, and the setting up of an avalanche condition in one of the said junctions, and means for measuring the transistor current amplification value, the polarizing voltage sign forming the writing logic information, and the corresponding gain value determining the reading logic information.

DESIGN PATENTS

GRANTED MAR. 6, 1979

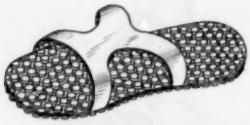
ERRATA

For CLASS	See PATENT NO.
021–168	251,261
021–244	251,262
012–212	251,263
012–112	251,264
021–114	251,265
021–114	251,266
015–009.1	251,270
018–007	251,271
018–007	251,272
003–035	251,273
003–061	251,274
020–018	251,275

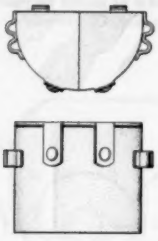
DESIGNS

MARCH 6, 1979

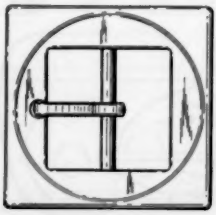
251,216
SLIPPER
Jacob Krippelz, 1121 Lebanon St., Aurora, Ill. 60538
Filed Jul. 1, 1977, Ser. No. 812,188
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—293



251,217
BELT ATTACHABLE CONTAINER FOR GOLF EQUIPMENT
Mark S. Mucha, 229 Flower City Park, Rochester, N.Y. 14615
Filed Oct. 26, 1976, Ser. No. 735,612
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D2—400



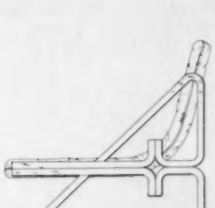
251,218
BUCKLE
Edward M. Stolarz, Yorktown Heights, N.Y., assignor to Presto Lock Company, division of Walter Kidde & Company, Inc., Garfield, N.J.
Filed Feb. 14, 1977, Ser. No. 768,607
Term of patent 14 years
Int. Cl. D2—*07*
U.S. Cl. D2—446



251,219
CHAIR OR SIMILAR ARTICLE
Warren D. Petersen, St. Charles, Ill., assignor to Burd, Inc., Howell Division
Filed Mar. 23, 1977, Ser. No. 780,653
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—31

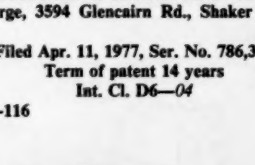
251,220
CHAIR OR SIMILAR ARTICLE
Warren D. Petersen, St. Charles, Ill., assignor to Burd, Inc., Howell Division
Filed Apr. 1, 1977, Ser. No. 783,785
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—31

251,221
CHAIR
Steven D. Gageby, 12 Hay Camp Rd., North Oaks, Minn. 55110
Filed Apr. 16, 1976, Ser. No. 677,626
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—66



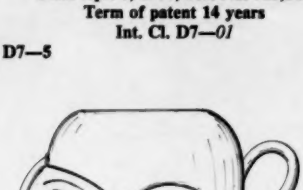
251,222
DISPLAY STAND FOR PIERCED EARRINGS
Samuel W. Patterson, Sauquoit, N.Y., assignor to Mele Manufacturing Co., Inc.
Filed Nov. 17, 1977, Ser. No. 852,480
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—85

251,223
COMBINED HAT AND COAT RACK
David A. Burge, 3594 Glencairn Rd., Shaker Heights, Ohio 44122
Filed Apr. 11, 1977, Ser. No. 786,300
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—116

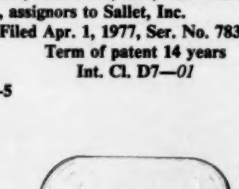


251,224
MERCHANDISE DISPLAY RACK
Allen F. Messenger, Maryville, Mo., assignor to Nixdorff-Krein Manufacturing Company, St. Louis, Mo.
Filed Aug. 13, 1976, Ser. No. 714,014
Term of patent 14 years
Int. Cl. D20—*02;* D6—*04*
U.S. Cl. D6—186

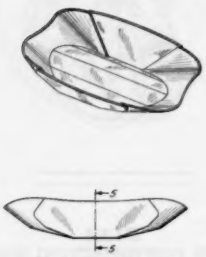
251,225
DRINKING MUG
Alfred W. Danat, Huntsville, Ala., and John L. Schaefer, Alexandria, Va., assignors to Sallet, Inc.
Filed Apr. 1, 1977, Ser. No. 783,843
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—5



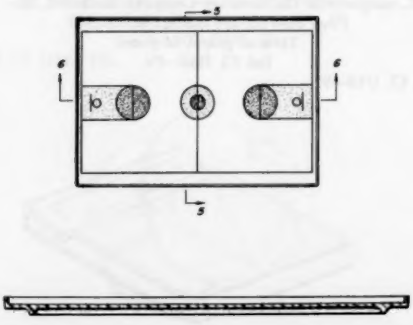
251,226
DRINKING MUG
Alfred W. Danat, Huntsville, Ala., and John L. Schaefer, Alexandria, Va., assignors to Sallet, Inc.
Filed Apr. 1, 1977, Ser. No. 783,844
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—5



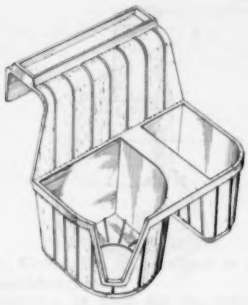
251,227
TRAY
Richard G. Mathison, Larsen, and Clifford G. Peters, Appleton, both of Wis., assignors to American Can Company, Greenwich, Conn.
Filed May 2, 1977, Ser. No. 793,186
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D7—37



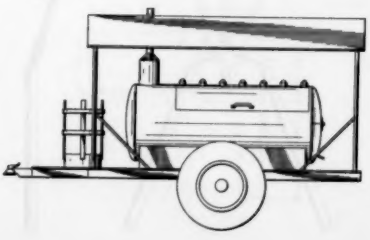
251,228
TRAY
Robert S. Block, Bayside, and John F. Krieger, Grafton, both of Wis., assignors to Robert S. Block
Division of Ser. No. 400,877, Sep. 26, 1973, Pat. No. Des. 241,106. This application Jul. 6, 1976, Ser. No. 702,620
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D7—37



251,229
CUP HOLDER
Dwight N. Wooters, LaGrange, Ga., assignor to Rubbermaid Specialty Products Inc., LaGrange, Ga.
Filed Mar. 23, 1977, Ser. No. 780,550
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D7—70

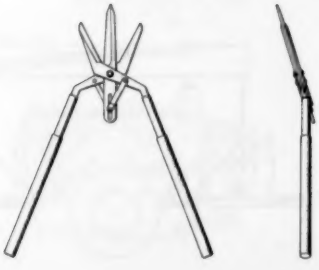


251,230
MOBILE BARBEQUE PIT
Henry E. Adams, 3011 South Blvd., Apt. 201, Dallas, Tex. 75215
Filed Oct. 11, 1977, Ser. No. 840,660
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—108

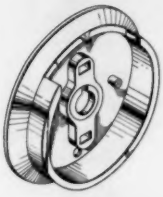


251,231
FOOD PROCESSOR
Fumiya Hashimoto, Tokyo, Japan, assignor to Sanyei Corporation, Tokyo, Japan
Filed Aug. 29, 1977, Ser. No. 828,888
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—153

251,232
SHEARS
Keiichi Yamamoto, Yono, Japan, assignor to Fuso Keigokin Co., Ltd., Tokyo, Japan
Filed Aug. 30, 1977, Ser. No. 829,260
Term of patent 14 years
Int. Cl. D8—*01*
U.S. Cl. D8—5

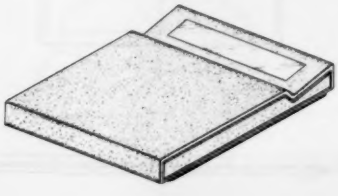


251,233
COMBINED DIAL RING AND REMOVABLE CENTER BEARING ASSEMBLY FOR COMBINATION LOCKS AND THE LIKE
James C. Miller, Nicholasville, Ky., assignor to Sargent & Greenleaf, Inc., Nicholasville, Ky.
Filed Apr. 5, 1977, Ser. No. 784,798
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—343



251,234
DEVICE FOR DETECTING SOUND
Bo H. Håkansson, Staffanstorp, and Lars O. V. Naucler, Lund, both of Sweden, assignors to Holger Crafoord AB, Lund, Sweden
Filed Jun. 24, 1976, Ser. No. 699,260
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—46

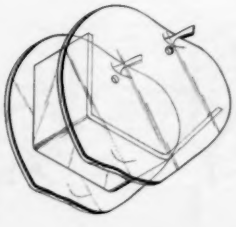
251,235
PLATFORM WEIGHING SCALE
Michael S. Joss, Skokie, and John V. Zaruba, Chicago, both of Ill., assignors to The Brearley Company, Rockford, Ill.
Filed Jan. 10, 1977, Ser. No. 757,947
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—91



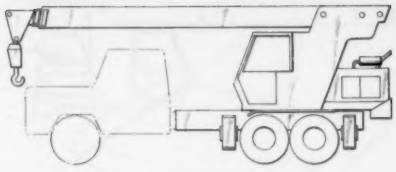
251,236
PLAQUE WITH SUNK RELIEF
William B. Campbell, Saint Paul, Minn., assignor to Ball Corporation, Muncie, Ind.
Filed Apr. 18, 1977, Ser. No. 788,656
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—135

251,237
PLANTER
Robert S. Lutzker, 21 Lee Ave., East Williston, N.Y. 11596
Filed May 2, 1977, Ser. No. 793,163
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—151

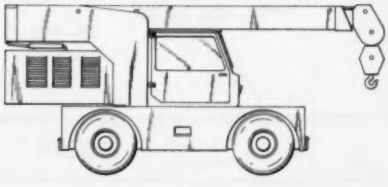
251,238
PLANTER
Robert S. Lutzker, 21 Lee Ave., East Williston, N.Y. 11596
Filed May 2, 1977, Ser. No. 793,166
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—151



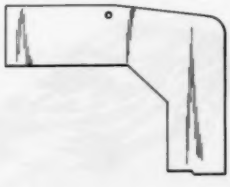
251,239
TRUCK MOUNTED CRANE
John L. Grove, Greencastle, Pa., assignor to JLG Industries, Inc., McConnellsburg, Pa.
Filed May 12, 1977, Ser. No. 796,294
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D12—56



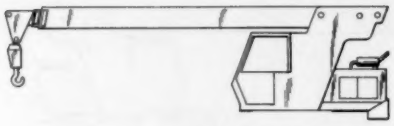
251,240
INDUSTRIAL CRANE
John L. Grove, Greencastle, Pa., assignor to JLG Industries, Inc., McConnellsburg, Pa.
Filed Sep. 15, 1977, Ser. No. 833,412
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D12—57



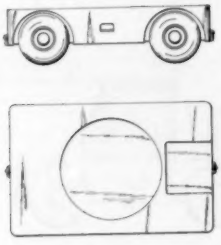
251,241
BOOM SUPPORT FOR A CRANE
John L. Grove, Greencastle, Pa., assignor to JLG Industries, Inc., McConnellsburg, Pa.
Filed Sep. 15, 1977, Ser. No. 833,411
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D12—60



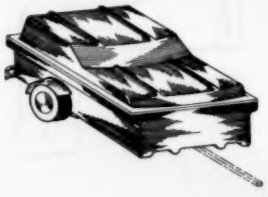
251,242
REVOLVING SUPER STRUCTURE FOR A CRANE
John L. Grove, Greencastle, Pa., assignor to JLG Industries, Inc., McConnellsburg, Pa.
Filed May 12, 1977, Ser. No. 796,436
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D12—61



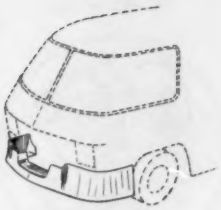
251,243
INDUSTRIAL CRANE CHASSIS
John L. Grove, Greencastle, Pa., assignor to JLG Industries, Inc., McConnellsburg, Pa.
Filed Sep. 15, 1977, Ser. No. 833,409
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D12—61



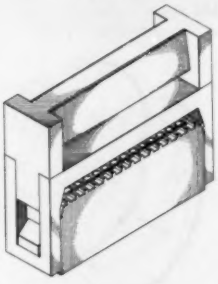
251,244
CAMPING TRAILER
William D. Olmstead, 2359 Newport Blvd., Space 70, Costa Mesa, Calif. 92627, and Donald T. Larsen, 5314 Clearsite, Torrance, Calif. 90505
Filed Feb. 10, 1977, Ser. No. 767,619
Term of patent 14 years
Int. Cl. D12—*10*
U.S. Cl. D12—104



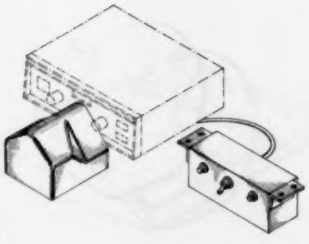
251,245
AIR DAM FOR MOTOR HOME
Stephen D. Senour, 5106 Kingsley Dr., Indianapolis, Ind. 46205
Filed Dec. 19, 1977, Ser. No. 858,465
Term of patent 7 years
Int. Cl. D12—*16*
U.S. Cl. D12—181



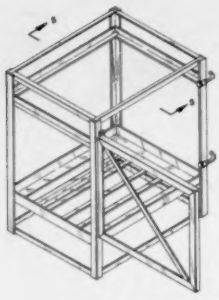
251,246
MULTI-CONTACT ELECTRICAL CONNECTOR
Philip J. Thomas, Costa Mesa; John A. McAllister, Mission Viejo, and Roger D. Lang, Irvine, all of Calif., assignors to Circuit Assembly Corp., Costa Mesa, Calif.
Filed May 9, 1977, Ser. No. 794,762
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—24



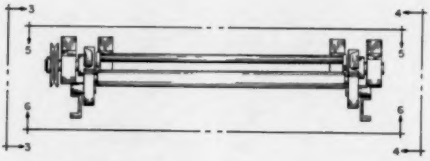
251,247
SCANNER ATTACHMENT UNIT FOR CB TRANSCEIVER
Philip J. Lindemann, Omak, Wash., assignor to Lin-Tronics, Inc., Omak, Wash.
Filed Apr. 5, 1977, Ser. No. 784,942
Term of patent 14 years
Int. Cl. D14—*199*
U.S. Cl. D14—99



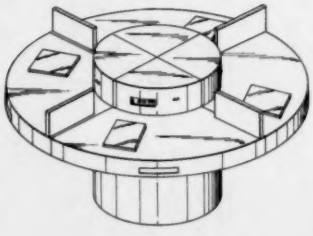
251,248
KILN FRAME
Frederick L. Olsen, Pinyon Crest, Box 205, Mountain Center, Calif. 92361
Filed Jul. 15, 1976, Ser. No. 705,674
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—141



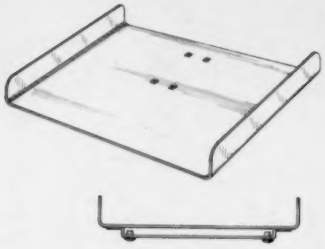
251,249
LOW PROFILE ROLLER DECK VIBRATORY PACKER
Charles E. DeCrane, West Monroe, La., assignor to Olinkraft, Inc., West Monroe, La.
Filed Sep. 7, 1976, Ser. No. 720,920
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D15—147



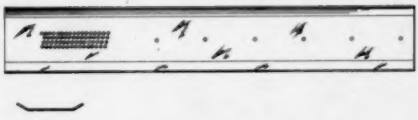
251,250
MULTIPLEXED ELECTROSTATIC COPIER HAVING PLURAL SCAN STATIONS AND COMMON DEVELOPMENT
Alfred B. Levine, 2924 Terrace Dr., Chevy Chase, Md. 20015
Continuation-in-part of Ser. No. 775,110, Mar. 7, 1977, abandoned. This application May 9, 1978, Ser. No. 904,457
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—27



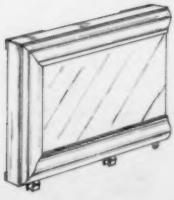
251,251
CALENDAR HOLDER
Robert J. Tiedemann, Stamford, Conn., assignor to Sheller-Globe Corporation, Toledo, Ohio
Filed May 31, 1977, Ser. No. 801,830
Term of patent 14 years
Int. Cl. D19—*03*
U.S. Cl. D19—20



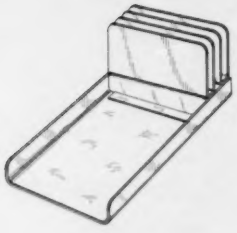
251,252
BEAM COMPASS
Friedolf Kamila, 104 S. Park Ave., Longmeadow, Mass. 01106
Continuation-in-part of Ser. No. 618,775, Oct. 2, 1975, abandoned. This application Oct. 11, 1977, Ser. No. 841,332
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—38



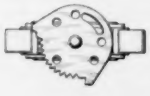
251,253
COMBINED NOTE AND PENCIL HOLDER
Donna J. Brinkman, 110 Brown, Osawatomie, Kans. 66064
Filed May 20, 1977, Ser. No. 798,901
Term of patent 14 years
Int. Cl. D19—*99*
U.S. Cl. D19—78

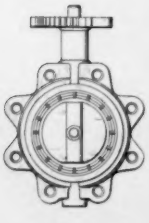


251,254
MEMO HOLDER
Robert J. Tiedemann, Stamford, Conn., assignor to Sheller-Globe Corporation, Toledo, Ohio
Filed May 31, 1977, Ser. No. 801,829
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—90

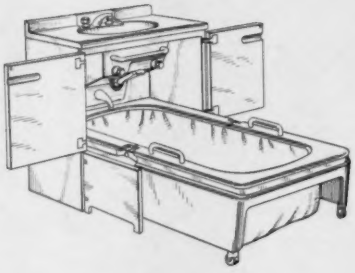


251,255
BUTTERFLY VALVE
George E. Hansen, Elmwood Park, and John A. McInerney, Evergreen Park, both of Ill., assignors to Crane Co., New York, N.Y.
Filed May 18, 1977, Ser. No. 798,269
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—19

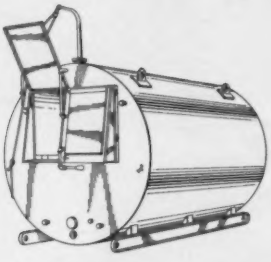




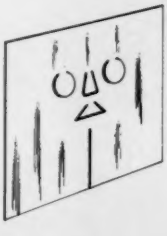
251,256
COMBINED LAVATORY CABINET AND FOLDING BATHTUB
Babette B. Newburger, 180 E. 79th St., New York, N.Y. 10021
Filed Aug. 31, 1977, Ser. No. 829,354
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—49



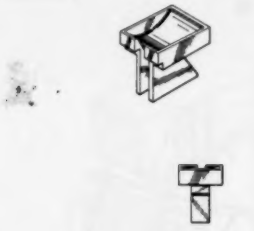
251,257
ASPHALT MELTING TANK
William F. Miller, Youngstown, Ohio, assignor to Hy-Way Heat Systems, Inc. Youngstown, Ohio
Filed Aug. 10, 1976, Ser. No. 713,261
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—77



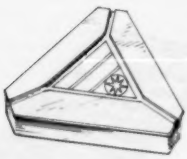
251,258
EMERGENCY BURN TREATMENT FACE MASK
Ronald A. Power, 2110 W. 230th St., Torrance, Calif. 90501
Filed Jun. 18, 1976, Ser. No. 697,278
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—26



251,259
MICROTOME BOAT
William K. Converse, Jr., P.O. Box 15089, Atlanta, Ga. 30333
Filed Mar. 9, 1977, Ser. No. 775,693
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D24—7

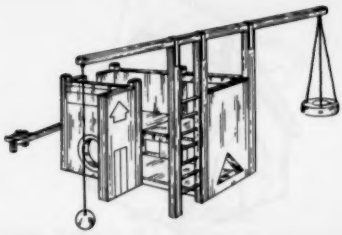


251,260
COSMETICS KIT
Terry M. Haber, Santa Ana, and Richard D. Panson, Laguna Niguel, both of Calif., assignors to Sunny Cosmetics, Ltd., Laguna Hills, Calif.
Filed Apr. 11, 1977, Ser. No. 786,094
Term of patent 14 years
Int. Cl. D28—*02*
U.S. Cl. D28—78

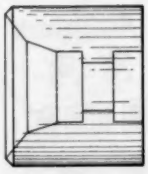


251,261
TOY FIGURE
Erik P. Tapdrup, Virum, Denmark, assignor to Interlego A.G., Baar, Switzerland
Filed Aug. 2, 1976, Ser. No. 710,853
The portion of the term of this patent subsequent to Jun. 13, 1992, has been disclaimed.
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—168

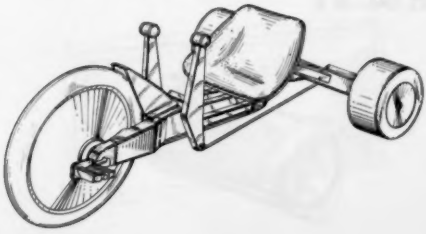
251,262
PLAYGROUND STRUCTURE
Norman C. Barrett, and Francis A. Carpenter, both of P.O. Box 2843, Vero Beach, Fla. 32960
Filed Jun. 23, 1977, Ser. No. 809,165
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D21—244



251,263
SKATE WHEEL
Robert R. Willis, Barrington, R.I., assignor to Quality Products, Incorporated, Warwick, R.I.
Filed Dec. 12, 1975, Ser. No. 640,272
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D12—212



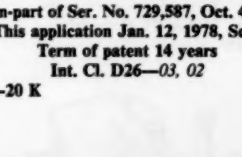
251,264
TOY VEHICLE
Calvin S. Cook; James Smith, both of Erie, Pa.; John A. Vernon, Jr., Bethel, and Richard Ratkiewich, Prospect, both of Conn., assignors to Louis Marx & Co., Inc., Stamford, Conn.
Filed Aug. 2, 1976, Ser. No. 711,044
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D12—112



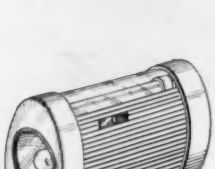
251,265
TOY BUILDING
Michael H. Shorten, Alcester, England, assignor to Thornhill Plastics Limited, Warwickshire, England
Filed Jul. 18, 1977, Ser. No. 816,886
Claims priority, application United Kingdom, Apr. 12, 1977, 979648
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—114

251,266
TOY DOLL HOUSE
William D. Gordon, Sr., Glenview, Ill., assignor to Arvey Corporation, Chicago, Ill.
Filed Jul. 29, 1977, Ser. No. 820,244
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—114

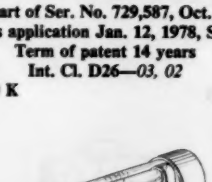
251,267
COMBINED PORTABLE SPOT AND FLOOD LIGHT
Thomas Zelina, Erie, Pa., assignor to Lighting Systems, Inc., Erie, Pa.
Continuation-in-part of Ser. No. 729,587, Oct. 4, 1976, Pat. No. D. 247,457. This application Jan. 12, 1978, Ser. No. 869,026
Term of patent 14 years
Int. Cl. D26—*03, 02*
U.S. Cl. D48—20 K



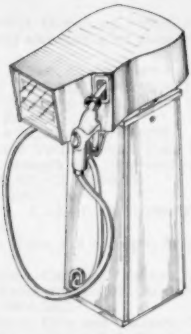
251,268
COMBINED PORTABLE SPOT AND FLOOD LIGHT
Thomas Zelina, Erie, Pa., assignor to Lighting Systems, Inc., Erie, Pa.
Continuation-in-part of Ser. No. 729,587, Oct. 4, 1976, Pat. No. D. 247,457. This application Jan. 12, 1978, Ser. No. 869,104
Term of patent 14 years
Int. Cl. D26—*03, 02*
U.S. Cl. D48—20 K



251,269
COMBINED PORTABLE SPOT AND FLOOD LIGHT
Thomas Zelina, Erie, Pa., assignor to Lighting Systems, Inc., Erie, Pa.
Continuation-in-part of Ser. No. 729,587, Oct. 4, 1976, Pat. No. D. 247,457. This application Jan. 12, 1978, Ser. No. 869,105
Term of patent 14 years
Int. Cl. D26—*03, 02*
U.S. Cl. D48—20 K



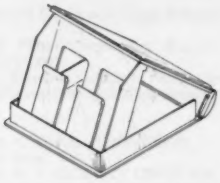
251,270
SWING-ARM FUEL DISPENSER FOR SERVICE STATIONS
John S. Loy; Elmer A. Robbins, and Melvin C. Hankel, all of Fort Wayne, Ind., assignors to Tokheim Corporation, Fort Wayne, Ind.
Filed Nov. 10, 1975, Ser. No. 630,306
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D15—9.1



251,271
ELECTRONIC CALCULATING MACHINE
Yoshiaki Kobayashi, Osaka, Japan, assignor to Sharp Corporation
Filed Sep. 6, 1977, Ser. No. 831,010
Claims priority, application Japan, Mar. 7, 1977, 52-8141
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—7

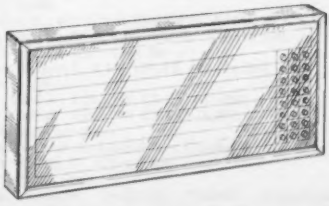
251,272
ELECTRONIC CALCULATING MACHINE
Shigetoshi Hazama; Matafumi Ikeda; Masafumi Yamagami, and Yoshiaki Kobayashi, all of Osaka, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Sep. 6, 1977, Ser. No. 831,069
Claims priority, application Japan, Mar. 10, 1977, 52-9104
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—7

251,273
MAGNETIC DISC STORAGE CASE
Robert A. Egly, 1630 Marquerite Dr., Corona Del Mar, Calif. 92625
Filed Sep. 20, 1976, Ser. No. 724,513
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—35



251,274
KEY HOLDER
John Colan, Warwick, R.I., assignor to Crownmark Corporation, Providence, R.I.
Filed Mar. 7, 1977, Ser. No. 775,297
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—61

251,275
CONTROL BOARD FOR AUTOMOTIVE SERVICE
Clarence T. Yoshida, 500 March Dr., Montebello, Calif. 90640
Filed Apr. 11, 1977, Ser. No. 786,282
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D20—18



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 6TH DAY OF MARCH, 1979

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. H. Robins Company, Inc.: *See—*
Welstead, William J., Jr.; and Cale, Albert D., Jr., 4,143,150, Cl. 424-274.000.

Abblard, Jean; Ghazarian, Michel; and Viricel, Rene, to Philagro S.A. Process for preparing aluminum ethyl phosphite. 4,143,059, Cl. 260-448.00R.

Abe, Yuuhei; Mohri, Katsuo; Azuma, Nobuo; Kuwahara, Kazuyoski; Yabe, Yuhiko; and Tominaga, Yasunori, to Hitachi, Ltd. Control apparatus for air conditioning unit. 4,142,375, Cl. 62-158.000.

ABG-SEMCA S.A.: *See—*
Riazuelo, Serge, 4,142,408, Cl. 73-140.000.

Abraham, John K.; and Vander Arend, Peter J., to Republic Steel Corporation. High strength low alloy steel containing columbium and vanadium. 4,142,922, Cl. 148-36.000.

Abrasives International N.V.: *See—*
Lovejoy, Elwyn R., 4,142,870, Cl. 51-298.000.

Absenger, Erich: *See—*
Hatz, Ernst; Eibl, Heinz; and Absenger, Erich, 4,142,503, Cl. 123-198.00D.

Ackerfeldt, Bo I.; Olsson, Curt; and Crafoord, Carl-Goran, to Sikob Svensk Industris Konstruktions-Och Berakningskontor AB. Golf bag. 4,142,563, Cl. 150-1.50C.

Ackerfeldt, Bo I.; Olsson, Curt; and Crafoord, Carl-Goran, to Sikob Svensk Industris Konstruktions-Och Berakningskontor AB. Golf cart. 4,142,736, Cl. 280-652.000.

Actus, Inc.: *See—*
Mueller, Anthony A., 4,142,706, Cl. 250-328.000.

Acuff, Kenneth J., to Isolab, Incorporated. Method to determine a diagnostic indicator of blood sugar condition, and, a liquid chromatographic microcolumn therefor. 4,142,855, Cl. 23-230.00B.

Acuff, Kenneth J., to Isolab, Incorporated. Method to determine a diagnostic indicator of blood sugar condition, and, a liquid chromatographic microcolumn therefor. 4,142,856, Cl. 23-230.00B.

Acuff, Kenneth J., to Isolab, Incorporated. Method to determine a diagnostic indicator of blood sugar condition, and, a liquid chromatographic microcolumn therefor. 4,142,857, Cl. 23-230.00B.

Acuff, Kenneth J., to Isolab, Incorporated. Method to determine a diagnostic indicator of blood sugar condition, and, a liquid chromatographic microcolumn therefor. 4,142,858, Cl. 23-230.00B.

Adair, Edwin L. Urethral contraception device and method of applying same. 4,142,516, Cl. 128-1.00R.

Adair, William A., to Teledyne Industries Inc. Cord clamp for drafting board assembly. 4,142,294, Cl. 33-80.000.

Adams, Lionel B.; Lovell, Keith V.; Partridge, Gordon; and Ringrose, Barbara J., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Polymeric materials. 4,143,218, Cl. 429-254.000.

Addressograph-Multigraph Corporation: *See—*
Oddo, Eugene P., 4,142,795, Cl. 355-106.000.

Adelmann, Siegfried; Margotte, Dieter; Vernaleken, Hugo; and Nouvertne, Werner, to Bayer Aktiengesellschaft. Thermoplastic polycarbonate moulding compositions with improved ease of mould release. 4,143,024, Cl. 260-31.2XA.

Adhikary, Parimal K. Novel pyrido-imidazo-indoles, compositions and method therewith. 4,143,142, Cl. 424-256.000.

Adlerstein, Michael G.; and Sprague, Robert L., to Raytheon Company. Spray etch dicing method. 4,142,893, Cl. 96-36.200.

Adolph Saurer Limited: *See—*
Bosch, Norbert, 4,142,605, Cl. 181-204.000.

Agfa Gevaert Aktiengesellschaft: *See—*
Frank, Karl; and Melzer, Arnfried, 4,142,895, Cl. 96-66.400.

Ahlen, Karl G.; Bergstrom, Per-Olof; and Supanich, Joseph, to S.R.M. Hydromekanik Aktiebolag. Multiple speed double planetary gear transmission. 4,142,425, Cl. 74-760.000.

Aisin Seiki Kabushiki Kaisha: *See—*
Sakakibara, Naoji; Hashimoto, Nobuyuki; and Shibata, Norio, 4,142,553, Cl. 137-625.440.

Akahane, Yoshikazu, to Kabushiki Kaisha Suwa Seikosha. Electronic timepiece. 4,142,360, Cl. 58-23.00R.

Akopdzhanian, Felix K.: *See—*
Kazanovich, Boleslav B.; Santurian, Germes R.; Fischenko, Petr A.; Potapenko, Iosif A.; Budnyatsky, David M.; Akopdzhanian, Felix K.; Oganesian, Tsolak R.; Kazarian, Edvard S.; Dzhanbaev, Salikh I.; Seryapov, Alexandr I.; Shakhnazarian, Albert T.; Mezhdo, Murad S.; Bachilo, Leverie L.; Bushmin, Anatoly P.; Gershman, Mikhail B.; Samokhvalov, Anatoly I.; and Oganesian, Georgy S., 4,142,579, Cl. 165-84.000.

Aktiebolaget Svensk Rubber: *See—*
Petersson, Bengt O., 4,142,659, Cl. 222-514.000.

Akzona Incorporated: *See—*
De Jage, Evert; and De Visser, Jacob, 4,143,136, Cl. 424-240.000.
McCorsley, Clarence C., III; and Varga, Julianna K., 4,142,913, Cl. 106-186.000.

Alafandi, Hamid, to Filtrol Corporation. Shaped catalyst support. 4,142,994, Cl. 252-450.000.

Alafandi, Hamid; and Stamires, Dennis, to Filtrol Corporation. Method of producing zeolitic catalysts with silica alumina matrix. 4,142,995, Cl. 252-455.00Z.

Alb. Klein KG: *See—*
Bastgen, Wendel, 4,142,461, Cl. 100-118.000.

Albany International Corp.: *See—*
Kositzke, Robert H., 4,142,557, Cl. 139-425.00A.

Alberino, Louis M.; and Smith, Curtis P., to Upjohn Company, The. Preparation of carbodiimide-containing polyisocyanates. 4,143,063, Cl. 260-453.0SP.

Alcar S.R.L.: *See—*
Sabbatini, Massimo, 4,143,229, Cl. 562-496.000.

Alden Research Foundation: *See—*
Wood, Theodore H., 4,142,769, Cl. 339-88.00R.

Alexander, Thomas J.; and Wilson, Walter, to Eaton Corporation. Self adjusting hoist brake. 4,142,610, Cl. 188-71.900.

Allied Chemical Corporation: *See—*
Long, E. David, 4,142,497, Cl. 123-139.0AN.
Narasimhan, Mandayam C., 4,142,571, Cl. 164-88.000.
Zwolinski, Leon M.; and Frink, John W., 4,143,008, Cl. 260-18.0TN.

Allied Plastics, Inc.: *See—*
Leff, Michael G.; and Cobb, Ronald W., 4,142,634, Cl. 206-392.000.

Allware Agencies Ltd.: *See—*
Brattstrom, Edward H., 4,142,844, Cl. 417-423.00R.

Almouli, Albert A. Aerosol dispenser particularly useful as a pocket fire extinguisher. 4,142,650, Cl. 222-135.000.

Alsina, Pierre A., to Spin Optic. Collapsible alignment apparatus for automotive vehicles. 4,142,299, Cl. 33-288.000.

Altier, Anthony L. Archer's bow sight. 4,142,297, Cl. 33-265.000.

Aluminum Company of America: *See—*
Deveney, Charles H.; and Kolakowski, Ronald L., 4,142,396, Cl. 72-329.000.

Aluminum Plumbing Fixture Corp.: *See—*
Campbell, J. Les, 4,142,256, Cl. 4-3.000.

Alza Corporation: *See—*
Zaffaroni, Alejandro; Michaels, Alan S.; and Theeuwes, Felix, 4,142,526, Cl. 128-260.000.

Amano, Minoru: *See—*
Sato, Hideshi; Otsubo, Takashi; Goto, Syunsuke; Amano, Minoru; and Seriu, Naoyuki, 4,142,399, Cl. 73-19.000.

Amazonen-Werke H. Dreyer: *See—*
Dreyer, Heinz; Bolwin, Heinz; and Hulsmann, Werner, 4,142,685, Cl. 239-655.000.

Ambrosiano, Nicholas A.: *See—*
Jefferies, Patrick J.; and Ambrosiano, Nicholas A., 4,143,034, Cl. 260-160.000.

Ameco Corporation: *See—*
Roethke, Alfred A. K., 4,142,289, Cl. 29-736.000.

Amer-O-Matic Corp.: *See—*
Long, William J.; Long, Charles A., Jr.; Babanats, Robert L.; Roberts, Larry W.; and Williams, H. Ross, 4,142,430, Cl. 83-23.000.

American Coldset Corporation: *See—*
Thompson, Charles M.; Spehrley, Charles W.; and Thompson, Charles T., 4,142,594, Cl. 175-59.000.

American Cyanamid Company: *See—*
Marocco, Frank J.; and Bolanowski, Lelia A., 4,142,628, Cl. 206-63.300.

American Home Products Corporation: *See—*
Foell, Theodore J.; and Rees, Richard W. A., 4,143,133, Cl. 424-177.000.
Lien, Eric L.; and Clark, Donald E., 4,143,158, Cl. 424-330.000.
Sarantakis, Dimitrois, 4,143,032, Cl. 260-112.50R.

American Optical Corporation: *See—*
Meltzer, Robert J., 4,143,116, Cl. 422-116.000.

Ameron, Inc.: *See—*
Wilms, Carl A., 4,142,551, Cl. 137-615.000.
Wilms, Carl A., 4,142,740, Cl. 285-18.000.

Amicon Corporation: *See—*
Rigopulos, Peter N.; Desaulniers, Charles W.; and Doucette, David E., 4,143,203, Cl. 428-407.000.

Amikura, Takashi: *See—*
Suzuki, Ryoichi; Uchiyama, Takashi; Matsumoto, Seiichi; Amikura, Takashi; and Tsunekawa, Tokuichi, 4,142,786, Cl. 354-32.000.

AMP Incorporated: *See—*
Barnes, Ronald B.; Brinser, Stanley B.; and Swengel, Robert C., Jr., 4,142,771, Cl. 339-95.00R.
Davis, Thomas F., 4,143,186, Cl. 427-345.000.
Grabbe, Dimitry G., 4,142,287, Cl. 29-628.000.
Wagner, Richard M.; and Zimmerman, Richard H., 4,143,253, Cl. 200-5.00A.

Ampex Corporation: *See—*
MacKenzie, Robert P., 4,143,396, Cl. 358-8.000.

Amtel, Inc.: *See—*
Karl, Robert D.; Engh, Ian B.; and Bennison, Harry, 4,142,767, Cl. 339-1.00R.

Anchortank, Inc.: *See—*
Stauber, Charles P., 4,142,284, Cl. 29-417.000.

Andersen, Richard H., to General Electric Company. Tip cooling for turbine blades. 4,142,824, Cl. 415-115.000.

Anderson, Duane B.; and Edwards, Carl D., to Standard Oil Company (Indiana). Shale stabilizing drilling fluid. 4,142,595, Cl. 175-72.000.

Anderson, John S. Framed picture puzzle. 4,142,726, Cl. 273-157.00R.

Anderson, Robin L.: *See—*
Remmell, John A.; Blitzer, Frank; Anderson, Robin L.; and Dietrich, Robert G., 4,142,695, Cl. 244-3.140.

Andrade, Harold H. Building construction. 4,142,335, Cl. 52-90.000.

Andreas Stihl, Firma: *See—*
Landwehr, Goetz; Lux, Helmut; and Duemmel, Karl-Heinz, 4,142,607, Cl. 181-259.000.

Andres, Rudolf, to Daimler-Benz Aktiengesellschaft. Reel mechanism for elimination of belt looseness of a safety belt system. 4,142,692, Cl. 242-107.000.

Andros Incorporated: *See—*
Jassawalla, Jal S.; Chen, Herbert; and Olaffson, Ingvar, 4,142,524, Cl. 128-214.00F.

Anglada, Leonard R.: *See—*
Binard, William J.; Ciarico, Anthony J.; Anglada, Leonard R.; and Patel, Bhupendra C., 4,142,525, Cl. 128-218.00R.

Ansted, Roger C.; and Dougan, Roger W., to Wylain, Inc. Demand defrost time clock control circuit. 4,142,374, Cl. 62-155.000.

Antonelli, Michael, Sr. Corrosion resistant coating composition. 4,142,903, Cl. 106-14.240.

Aoki, Hatsuo: *See—*
Kuroda, Yoshio; Okuhara, Masakuni; Iguchi, Eiko; Aoki, Hatsuo; and Imanaka, Hiroshi, 4,143,135, Cl. 424-211.000.

Aono, Shigeo: *See—*
Asano, Masaharu; Fujishiro, Takeshi; Aono, Shigeo; Hosaka, Akio; Manaka, Nobuzi; and Ezoe, Mituhiko, 4,142,482, Cl. 123-32.0EE.
Hosaka, Akio; and Aono, Shigeo, 4,142,490, Cl. 123-117.00R.

Apfel, Robert E. Detector and dosimeter for neutrons and other radiation. 4,143,274, Cl. 250-473.000.

Applebaum, David C.: *See—*
Mallozzi, Philip J.; Epstein, Harold M.; Jung, Richard G.; Applebaum, David C.; Fairand, Barry P.; Gallagher, William J.; Uecker, Ronald L.; and Muckerheide, Myron C., 4,143,275, Cl. 250-503.000.

Appley, Robert J. Vehicle for the handicapped. 4,143,281, Cl. 296-146.000.

Arai, Masataka: *See—*
Morozumi, Mituharu; Arai, Masataka; and Iseki, Shigeru, 4,143,110, Cl. 264-117.000.

Arai, Tetsuzo: *See—*
Satake, Jiro; Arai, Tetsuzo; Miyamoto, Yoshifumi; and Inoue, Hiroo, 4,142,555, Cl. 138-143.000.

Aranguren, William L.; and Langseth, Rollin E., to Bell Telephone Laboratories, Incorporated. Small digital time division switching arrangement. 4,143,241, Cl. 179-15.0AQ.

Arbrook, Inc.: *See—*
Stockum, Glenn F., 4,143,109, Cl. 264-112.000.
Wihksne, Allen, 4,143,194, Cl. 428-81.000.

Arendt, Armin, to Robert Bosch GmbH. Automotive voltage regulator to control voltge supply to an on-board vehicle network. 4,143,313, Cl. 322-28.000.

Ariyasu, Kenji: *See—*
Ogata, Yasuhiro; and Ariyasu, Kenji, 4,142,404, Cl. 73-762.000.

Armstrong Cork Company: *See—*
Lewicki, Walter J., Jr.; McQuate, William M.; and Ringer, Richard M., 4,142,849, Cl. 425-385.000.

Armstrong, James B.; and Trimmier, J. Robert, to Sperry Rand Corporation. Laminated filter-electroluminescent recitular index for cathode ray display. 4,143,404, Cl. 358-253.000.

Arneklev, Duane R.; Baker, Don R.; and Walker, Francis H., to Stauffer Chemical Company. N-(1,1 Substituted propynyl)α(3,5-substituted phenoxy) alkyl amides. 4,143,069, Cl. 260-559.00B.

Arnold, Forest D. Fully ventilated storm suit. 4,142,254, Cl. 2-84.000.

Arnquist, Willard D.; Foster, Thomas G.; and Roalsvig, Melvin J., to Boeing Commercial Airplane Company. Lateral control system. 4,142,699, Cl. 244-83.00K.

Arzoumanidis, Gregory G.; Gold, Richard F.; and Michel, Christian G., to Stauffer Chemical Company. Substantially agglomeration-free catalyst component. 4,142,991, Cl. 252-429.00B.

Asahi Glass Company Ltd.: *See—*
Morozumi, Mituharu; Arai, Masataka; and Iseki, Shigeru, 4,143,110, Cl. 264-117.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Ogawa, Ryota, 4,142,779, Cl. 350-184.000.

Asano, Masaharu; Fujishiro, Takeshi; Aono, Shigeo; Hosaka, Akio; Manaka, Nobuzi; and Ezoe, Mituhiko, to Nissan Motor Company, Limited. Feedback emission control for internal combustion engines with variable reference compensation for change with time in performance of exhaust composition sensor. 4,142,482, Cl. 123-32.0EE.

Asano, Masao: *See—*
Sato, Yuzuru; Asano, Masao; Ishihara, Masao; and Terada, Sadatugu, 4,142,899, Cl. 96-77.000.

Ashland Oil, Inc.: *See—*
Michelson, Anatol, 4,142,573, Cl. 164-169.000.

Ashton, Bruce H.: *See—*
Woodward, John W.; and Ashton, Bruce H., 4,142,587, Cl. 172-47.000.

Aslund, Christer, to Granges Nyby AB. Method of producing tubes or the like and capsule for carrying out the method as well as blanks and tubes according to the method. 4,143,208, Cl. 428-558.000.

Asperger, Robert G.; Krawczyk, Leroy S.; and Oakes, Billy D., to Dow Chemical Company, The. Method and composition for inhibiting the corrosion of ferrous metals. 4,143,119, Cl. 423-226.000.

Astheimer, Robert W., to Barnes Engineering Company. Common path interferometer. 4,142,797, Cl. 356-346.000.

Atari, Inc.: *See—*
Romano, John V.; and Hector, Roger D., 4,142,722, Cl. 273-101.100.

Atherton, Frank R.; Hall, Michael J.; Hassall, Cedric H.; Lambert, Robert W.; and Ringrose, Peter S., to Hoffmann-La Roche Inc. Halo-phosphonopeptides. 4,143,134, Cl. 424-177.000.

Atkins, Geoff C. Electrical wire connector. 4,143,237, Cl. 174-87.000.

Atlantic Richfield Company: *See—*
Hudgin, Donald E., 4,143,096, Cl. 260-878.00R.
Pedersen, S. Erik; and Sheng, Ming N., 4,143,056, Cl. 260-346.750.

Atomic Energy of Canada Limited: *See—*
Butler, John P.; Rolston, John H.; den Hartog, James; Molson, Fred W. R.; and Goodale, John W., 4,143,123, Cl. 423-580.000.

Auger, Raymond N. Hybrid solar collector. 4,142,513, Cl. 126-271.000.

Auman, John T.: *See—*
Route, William D.; Auman, John T.; and Rogers, Wesley A., 4,143,368, Cl. 340-543.000.

Aumann, Marlies: *See—*
Bossert, Eduard; and Aumann, Marlies, 4,142,541, Cl. 134-143.000.

Auracher, Franz; and Kersten, Ralf, to Siemens Aktiengesellschaft. Method for making output/input coupler for multi-mode glass fibers. 4,142,877, Cl. 65-4.00B.

Autry, Steven R., to B. F. Goodrich Company, The. Relief valve. 4,142,549, Cl. 137-469.000.

Avco Corporation: *See—*
Lucas, Joseph G., 4,142,954, Cl. 204-146.000.
Tuten, William J., 4,142,442, Cl. 89-6.500.

Avesta Jernverks AB: *See—*
Sandberg, Sven Olof; and Smith, Sven R. E., 4,142,385, Cl. 68-178.000.

Avramenko, Rimily F.; Nikolaeva, Valentina I.; and Orlov, Leonid A. Method for transmitting two-dimensional information and system for effecting same. 4,142,773, Cl. 350-3.780.

Ayers, Herman W., to Northrop Corporation. IFF Diversity switch. 4,143,369, Cl. 343-6.50R.

Azuma, Nobuo: *See—*
Abe, Yuuhei; Mohri, Katsuo; Azuma, Nobuo; Kuwahara, Kazuyoski; Yabe, Yuhiko; and Tominaga, Yasunori, 4,142,375, Cl. 62-158.000.

B. F. Goodrich Company, The: *See—*
Autry, Steven R., 4,142,549, Cl. 137-469.000.
Hartitz, Joachim E., 4,143,030, Cl. 260-45.75B.
Kramer, James H., 4,142,816, Cl. 405-26.000.

Babanats, Robert L.: *See—*
Long, William J.; Long, Charles A., Jr.; Babanats, Robert L.; Roberts, Larry W.; and Williams, H. Ross, 4,142,430, Cl. 83-23.000.

Bachilo, Leverie L.: *See—*
Kazanovich, Boleslav B.; Santurian, Germes R.; Fischenko, Petr A.; Potapenko, Iosif A.; Budnyatsky, David M.; Akopdzhanian, Felix K.; Oganesian, Tsolak R.; Kazarian, Edvard S.; Dzhanbaev, Salikh I.; Seryapov, Alexandr I.; Shakhnazarian, Albert T.; Mezhdo, Murad S.; Bachilo, Leverie L.; Bushmin, Anatoly P.; Gershman, Mikhail B.; Samokhvalov, Anatoly I.; and Oganesian, Georgy S., 4,142,579, Cl. 165-84.000.

Backstrom, Goran; and Svensson, Orvar, to Fagersta Aktiebolag. Multi electrode torch. 4,143,260, Cl. 219-121.00P.

Bagshaw, Trevor: *See—*
McCann, John; and Bagshaw, Trevor, 4,143,258, Cl. 219-73.000.

Bahry, Abraham; and Dolev, Moshe. Cylinder lock. 4,142,389, Cl. 70-359.000.

Baigrie, Brian D.; Bailey, Joseph; Johnston, Linda G.; and Mijovic, Miroslav V., to Eastman Kodak Company. Photographic products and processes employing nondiffusible azo dye-releasing compounds. 4,142,891, Cl. 96-29.00D.

Bailey, Clyde E., to Phillips Petroleum Company. Bayonet heat exchanger having means for positioning bayonet tube in sheath tube. 4,142,580, Cl. 165-142.000.

Bailey, Joseph: *See—*
Baigrie, Brian D.; Bailey, Joseph; Johnston, Linda G.; and Mijovic, Miroslav V., 4,142,891, Cl. 96-29.00D.

Baker, Don R.: *See—*
Arneklev, Duane R.; Baker, Don R.; and Walker, Francis H., 4,143,069, Cl. 260-559.00B.

Balcke-Durr Aktiengesellschaft: *See—*
Wienpahl, Wolfgang, 4,142,646, Cl. 220-22.000.

Balding, John V.: *See*—
Cieslak, Richard F.; Balding, John V.; and Lafrenz, Joseph, 4,143,323, Cl. 325-363.000.
Balduman, Agapito P. Mancala game board assembly. 4,142,728, Cl. 273-242.000.
Bale, Christopher R.: *See*—
Perkins, Paul R.; and Bale, Christopher R., 4,142,535, Cl. 131-17.0AC.
Ballreich, Kurt; Jensen, Ernst; Ketterl, Alfred; and Stahlmann, Rudolf, to Dynamit Nobel Aktiengesellschaft. Projectile with at least one pyrotechnical charge, especially a tracer charge. 4,142,466, Cl. 102-87.000.
Bamforth, John R.; and Higgins, Raymond, to Imperial Chemical Industries Limited. Dimerization process. 4,143,087, Cl. 260-683.15R.
Bansal, Bihari; and Spremulli, Paul F., to Corning Glass Works. Furnace having different electrode immersions to control convection currents, the shape, elevation and stability of the fusion zone. 4,143,232, Cl. 13-6.000.
Baranyi, Sandor J., to Trochoidal Gear Technology, Inc. Hypotrochoidal planetary gear speed changers. 4,142,426, Cl. 74-801.000.
Barbee, Adron W., Jr. Platform laser beam generator support and alignment apparatus and method for using same. 4,142,798, Cl. 356-138.000.
Bardon, Pierre; Guillermin, Rene; and Joly, Jean, to Rhone-Poulenc-Textile. Textile elements of nodular appearance, processes for their manufacture and articles produced with such elements. 4,143,199, Cl. 428-369.000.
Barker, David: *See*—
Buckley, Keith; and Barker, David, 4,143,171, Cl. 426-331.000.
Barkow, William H., to RCA Corporation. Deflection yoke with permanent magnet raster correction. 4,143,345, Cl. 335-212.000.
Barlow, Jeffrey J.: *See*—
Main, Brian G.; and Barlow, Jeffrey J., 4,143,140, Cl. 424-248.540.
Barnes Engineering Company: *See*—
Astheimer, Robert W., 4,142,797, Cl. 356-346.000.
Barnes, Ronald B.; Brinser, Stanley B.; and Swengel, Robert C., Jr., to AMP Incorporated. Crimp-type terminal. 4,142,771, Cl. 339-95.00R.
Barrault, Joel; Guisnet, Michel; Lucien, Jacques; and Maurel, Raymond, to Societe Nationale Elf Aquitaine (Production). Process for preparing thiophenes. 4,143,052, Cl. 260-329.00R.
Barrett, Alfred H.: *See*—
Brewster, Roger F.; and Barrett, Alfred H., 4,143,414, Cl. 363-44.000.
Bartek, Joseph P.; and Grasselli, Robert K., to Standard Oil Company, The. Method for making indene. 4,143,082, Cl. 260-668.00F.
Barth, Wayne E., to Pfizer Inc. Antibacterial 3-(5-tetrazolyl)penam compounds. 4,143,039, Cl. 260-239.100.
Barton, Norman P., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Correction of gun sighting errors. 4,142,799, Cl. 356-153.000.
Bartsch, Wolfgang: *See*—
Wiedemann, Fritz; Kampe, Wolfgang; Thiel, Max; Bartsch, Wolfgang; and Roesch, Egon, 4,143,149, Cl. 424-273.00P.
BASF Aktiengesellschaft: *See*—
Bast, Klaus; and Plankenhorn, Erwin, 4,142,914, Cl. 106-288.00Q.
Hoffmann, Werner; and Von Fraunberg, Karl, 4,143,065, Cl. 260-464.000.
Loeffler, Hans-Peter; and Kiehs, Karl, 4,143,064, Cl. 260-456.00R.
Naarmann, Herbert; Penzien, Klaus; and Schulte, Wolfgang, 4,143,221, Cl. 526-44.000.
Pommer, Ernst-Heinrich; Reuther, Wolfgang; Raff, Paul; and Goettsche, Reimer, 4,143,153, Cl. 424-289.000.
Rossy, Phillip A.; Hoffmann, Werner; and Mueller, Norbert, 4,143,050, Cl. 260-332.20C.
BASF Wyandotte Corporation: *See*—
Creamer, Edward D.; Krumpelt, Michael; and Jorne, Jacob, 4,142,950, Cl. 204-96.000.
Bassin, Morton: *See*—
Tseng, Eugene; and Bassin, Morton, 4,143,202, Cl. 428-406.000.
Bast, Klaus; and Plankenhorn, Erwin, to BASF Aktiengesellschaft. Pigments which are stable in nitrocellulose. 4,142,914, Cl. 106-288.00Q.
Bastgen, Wendel, to Alb. Klein KG. Device for dewatering sludge and other material containing water and solid particles. 4,142,461, Cl. 100-118.000.
Battelle Memorial Institute: *See*—
Mallozzi, Philip J.; Epstein, Harold M.; Jung, Richard G.; Applebaum, David C.; Fairand, Barry P.; Gallagher, William J.; Uecker, Ronald L.; and Muckerheide, Myron C., 4,143,275, Cl. 250-503.000.
Bauer, Wolfgang; and Ribka, Joachim, to Cassella Aktiengesellschaft. Water-soluble disazo dyestuffs containing a 2-phenyl-benzimidazolyl,-benzoxazolyl or-benzthiazolyl middle component. 4,143,033, Cl. 260-155.000.
Bauman, Robert A., to Colgate Palmolive Company. Quaternary compounds having anti-microbial activity. 4,143,127, Cl. 424-54.000.
Baumgarten Montage GmbH: *See*—
Kelm, Reinhold, 4,142,395, Cl. 72-319.000.
Baur, Guenter; and Greubel, Waldemar, to Siemens Aktiengesellschaft. Electro-optical display device with electro-optical light valves. 4,142,781, Cl. 350-345.000.
Bausch & Lomb Incorporated: *See*—
Stolp, Myron G., 4,142,566, Cl. 150-52.00J.
Baver, Donald W.; Granzow, Robert H.; Horst, William R.; and Paganini, Bruno J., to NCR Corporation. Transducing device for signature verification system. 4,143,357, Cl. 340-146.3SY.
Baxter Travenol Laboratories, Inc.: *See*—
Bellotti, Marc; Schnell, William J.; and Munsch, John M., 4,142,974, Cl. 210-94.000.
Bayer Aktiengesellschaft: *See*—
Adelmann, Siegfried; Margotte, Dieter; Vernaleken, Hugo; and Nouvertne, Werner, 4,143,024, Cl. 260-31.2XA.
Dieterich, Dieter, 4,143,062, Cl. 260-453.0SP.
Findeisen, Kurt, 4,143,068, Cl. 260-545.00R.
Haas, Peter; Blahak, Johannes; Meiners, Hans-Joachim; and Mormann, Werner, 4,143,003, Cl. 521-129.000.
Hentschel, Claus; von Bonin, Wulf; Gehring, Joachim; and Hardt, Dietrich, 4,143,105, Cl. 264-51.000.
Hetzel, Hartmut; Gupta, Pramod; and Sandhagen, Hans-Joachim, 4,143,072, Cl. 260-573.000.
Muller, Erwin; and Thomas, Heinz, 4,143,220, Cl. 521-129.000.
Panek, Peter; Woditsch, Peter; Ritter, Wolfgang; and Tacke, Peter, 4,143,026, Cl. 260-42.140.
Psaar, Hubertus; and Kruckenberg, Winfried, 4,143,228, Cl. 548-379.000.
Radlmann, Eduard; Reinehr, Ulrich; and Nischk, Gunther, 4,143,200, Cl. 428-373.000.
Simm, Walter; Gosling, Claus; Bonart, Richard; and von Falkai, Bela, 4,143,196, Cl. 428-212.000.
Sinn, Gustav; Matner, Martin; and Bross, Hermann J., 4,143,198, Cl. 428-290.000.
Wagner, Kuno; Oertel, Gunter; Golitz, Hans D., deceased; and Quiring, Bernd, 4,143,060, Cl. 260-448.20N.
BBC Brown, Boveri & Company, Limited: *See*—
Hildebrant, Uwe; Nicoll, Andrew R.; and Sahm, Peter R., 4,142,921, Cl. 148-32.000.
Schaible, Wolfgang, 4,143,353, Cl. 340-146.1BE.
Bean, Lloyd F.; and Miller, Roger L., to Xerox Corporation. Toner combination for carrierless development. 4,142,981, Cl. 252-62.10P.
Beard, Dale A.: *See*—
Weibel, John, Jr.; Deaton, Homer W.; and Beard, Dale A., 4,142,373, Cl. 62-138.000.
Beatrice Foods Co.: *See*—
Shah, Syed M. M.; and Luksas, Anthony J., 4,143,174, Cl. 426-570.000.
Beaulieu, Jacques, to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Method of pumping. 4,143,337, Cl. 331-94.5PE.
Beaver, Richard N.; and Becker, Charles W., to Dow Chemical Company, The. Brine electrolysis using bonded asbestos diaphragms. 4,142,951, Cl. 204-98.000.
Beck, Robert W.; and Duarte, John S. Double-locking assembly for sliding glass closures. 4,142,747, Cl. 292-37.000.
Becker, Charles W.: *See*—
Beaver, Richard N.; and Becker, Charles W., 4,142,951, Cl. 204-98.000.
Becker, Otto A. Construction unit. 4,142,338, Cl. 52-173.00R.
Beckman Instruments, Inc.: *See*—
Ishimaru, Kenzo; and Gropper, Lee, 4,142,670, Cl. 233-20.00R.
Beckmann, Franz: *See*—
Weber, Heinrich; Dunga, Horst; Urbye, Klaus; Beckmann, Franz; Schmauch, Hugo; and Flasche, Karl H., 4,142,941, Cl. 201-6.000.
Beelitz, Howard R., to RCA Corporation. Decoder circuit. 4,143,359, Cl. 340-166.00R.
Belden Corporation: *See*—
Sheth, Ramesh D., 4,143,238, Cl. 174-107.000.
Bell Telephone Laboratories, Incorporated: *See*—
Aranguren, William L.; and Langseth, Rollin E., 4,143,241, Cl. 179-15.0AQ.
Biggs, Ronald D., 4,143,287, Cl. 307-311.000.
Bobeck, Andrew H., 4,143,419, Cl. 365-19.000.
Bobeck, Andrew H., 4,143,420, Cl. 365-19.000.
Cherin, Allen H.; and Osborne, Anthony, 4,142,776, Cl. 350-96.210.
Holbrook, Walter R.; and Koszi, Louis A., 4,142,662, Cl. 228-110.000.
Plewes, John T., 4,142,918, Cl. 148-11.50C.
Ramaswamy, Vellayan; and Standley, Robert D., 4,142,775, Cl. 350-96.140.
Smith, Nicholas K., 4,143,246, Cl. 179-15.0BS.
Stokes, Rembert R., 4,142,312, Cl. 40-336.000.
Belles, Wayne S.: *See*—
Hunter, Don L.; and Belles, Wayne S., 4,142,886, Cl. 71-92.000.
Bellina, Russell F.; and Fost, Dennis L., to Du Pont de Nemours, E. I., and Company. Miticidal and aphicidal method utilizing 2-higher alkyl-3-hydroxy-1'4-naphthoquinone carboxylic acid esters. 4,143,157, Cl. 424-314.000.
Bellinga, Hendrik, to N.V. Nederlandse Gasunie. Device for improving the flow profile in a gas line. 4,142,413, Cl. 73-198.000.
Bellotti, Marc; Schnell, William J.; and Munsch, John M., to Baxter Travenol Laboratories, Inc. Apparatus for measuring ultrafiltration during dialysis with longitudinally movable and clampable retention member. 4,142,974, Cl. 210-94.000.
Belyavsky, Mikhail A.: *See*—
Lezgintsev, Georgy M.; Istoshin, Stanislav J.; and Belyavsky, Mikhail A., 4,142,818, Cl. 405-191.000.
Bendix Corporation, The: *See*—
Casey, Gary L.; and Tuller, Bruce H., 4,142,683, Cl. 239-585.000.
Dressel, Michael O.; and Varner, Horace M., 4,142,596, Cl. 175-113.000.
Erwin, Louis R., 4,142,448, Cl. 91-372.000.

Hoge, Robert R., 4,143,348, Cl. 338-28.000.
Johannesen, Donald D., 4,142,611, Cl. 188-72.900.
Schira, John J.; Toelle, Alvin D.; and Phipps, Jack R., 4,142,493, Cl. 123-119.00A.

Bennett, Derek J., to Bunker Ramo Corporation. Cable depth selector and coil shunt penetrator. 4,143,349, Cl. 340-2.000.

Bennett, Richard N.; and Buckley, Lawrence W., to National Instrument Company, Inc. Filling machine with environmental control. 4,142,561, Cl. 141-82.000.

Bennison, Harry: *See—*
Karl, Robert D.; Engh, Ian B.; and Bennison, Harry, 4,142,767, Cl. 339-1.00R.

Bentley Engineering Company Limited: *See—*
Wood, Gillies, 4,142,384, Cl. 66-149.00S.

Bentley, Richard P. Cross country plate ski binding. 4,142,734, Cl. 280-615.000.

Berard, Clement A., Jr.; and Kinsley, Jonathan S., to RCA Corporation. Bilateral energy transfer apparatus. 4,143,282, Cl. 307-43.000.

Bergkvist, Lars A. Identification device. 4,142,387, Cl. 70-278.000.

Bergman, Richard C.: *See—*
Rich, Joseph W.; Bergman, Richard C.; and Treanor, Charles E., 4,142,955, Cl. 204-157.10R.

Bergomi, Angelo: *See—*
Tazuma, James J.; and Bergomi, Angelo, 4,143,045, Cl. 260-306.500.

Bergstrom, Per-Olof: *See—*
Ahlen, Karl G.; Bergstrom, Per-Olof; and Supanich, Joseph, 4,142,425, Cl. 74-760.000.

Berlenbach, Norbert: *See—*
von Hagel, Gunter; and Berlenbach, Norbert, 4,142,970, Cl. 210-49.000.

Bernard, Francois: *See—*
Moiroux, Auguste F.; and Bernard, Francois, 4,142,485, Cl. 123-46.00R.

Bernhart, James I.; Nobles, James W.; and White, Ronald L., to Magnavox Company, The. Method and apparatus for controlling a display terminal. 4,143,360, Cl. 340-711.000.

Bernini, Giancarlo, to Massey-Ferguson Services N.V. Draft sensing apparatus for use with tractors. 4,142,733, Cl. 280-446.00A.

Bernotavicz, John W., to Quaker Oats Company, The. Shaped blood by-product and process. 4,143,168, Cl. 426-266.000.

Berol Kemi AB: *See—*
Stromblad, Mats V.; and Idstrom, Bo T., 4,143,004, Cl. 521-174.000.

Berz, Wolfgang, to Gimag Aktiengesellschaft. Method and apparatus for cleaning a filter bed. 4,142,873, Cl. 55-12.000.

Bettcher Industries, Inc.: *See—*
Bettcher, Louis A., 4,142,291, Cl. 30-276.000.

Bettcher, Louis A., to Bettcher Industries, Inc. Trimming knife. 4,142,291, Cl. 30-276.000.

Betz Laboratories, Inc.: *See—*
Mattioli, Terrence W.; and Schieber, John R., 4,142,402, Cl. 73-61.200.

Beukers, John; Friedman, Maurice; and Potts, Luken, to Beukers Laboratories, Inc. Pressure sensor including a resistor commutator for providing unambiguous atmospheric pressure data. 4,143,335, Cl. 331-65.000.

Beukers Laboratories, Inc.: *See—*
Beukers, John; Friedman, Maurice; and Potts, Luken, 4,143,335, Cl. 331-65.000.

Bibbee, Jeffrey N.: *See—*
Smith, Thomas W.; and Bibbee, Jeffrey N., 4,143,114, Cl. 264-326.000.

Bienert, Horst, to Webasto-Werk W. Baier KG. Wind deflector for the sliding top of a motor vehicle. 4,142,759, Cl. 296-137.00J.

Bienert, Horst: *See—*
Lutz, Alfons; Jardin, Hans; Bienert, Horst; and Kohlpaintner, Georg, 4,142,761, Cl. 296-137.00B.

Biermann, Peter; and Sittmann, Brigitte, to Vereinigte Baubeschlagfabriken Gretsch & Co. GmbH. Safety ski binding. 4,142,735, Cl. 280-618.000.

Biggs, Ronald D., to Bell Telephone Laboratories, Incorporated. Photo coupling line isolation circuit. 4,143,287, Cl. 307-311.000.

Billigmeier, James M. Liquid pesticide metering, transferring and rinsing apparatus. 4,142,545, Cl. 137-240.000.

Billingsley, Lloyd E., to Compagnie Maritime d'Expertise, S.A. Pipe connector apparatus having gripping and sealing means. 4,142,739, Cl. 285-18.000.

Binard, William J.; Ciarico, Anthony J.; Anglada, Leonard R.; and Patel, Bhupendra C., to Kendall Company, The. Syringe assembly. 4,142,525, Cl. 128-218.00R.

Bindra, Jasjit S., to Pfizer Inc. 9-Hydroxydibenzo[b,d]pyrans and intermediates. 4,143,139, Cl. 424-248.550.

Bindra, Jasjit S.: *See—*
Hess, Hans-Jurgen E.; Johnson, Michael R.; Bindra, Jasjit S.; and Schaaf, Thomas K., 4,143,051, Cl. 260-332.20A.

Bing, Valentijn B.; and Schwartz, James W., to Zenith Radio Corporation. Television cathode ray tube having a voltage divider providing temperature-invariant voltage and associated method. 4,143,298, Cl. 315-3.000.

Bio-Tronics, Inc.: *See—*
Latenser, James S.; Estes, Roger Q.; and Connor, Gerald I., 4,142,529, Cl. 128-401.000.

Biondo, Joseph G.; and Savarese, Salvatore L., to Engelhard Minerals & Chemicals Corporation. Disposable dental capsule. 4,142,629, Cl. 206-219.000.

Birnstiel, Charles. Elevated rail transit guideway with noise attenuators. 4,142,468, Cl. 104-124.000.

Bishai, Makram N.: *See—*
Shih, Kelvin; and Bishai, Makram N., 4,142,539, Cl. 134-113.000.

Bito, Minoru: *See—*
Yamanaka, Teruo; Kato, Takayuki; Ozeki, Osamu; Sato, Kazuo; and Bito, Minoru, 4,143,370, Cl. 343-7.0VM.

Bjorklund, Curt A. Valve arrangement. 4,142,707, Cl. 251-77.000.

Blahak, Johannes: *See—*
Haas, Peter; Blahak, Johannes; Meiners, Hans-Joachim; and Mormann, Werner, 4,143,003, Cl. 521-129.000.

Blanchaud, Maurice; and Bournier, Edgar. Process for treatment of mushrooms. 4,143,167, Cl. 426-262.000.

Blatnik, George A.; and Kosareff, John W., to Kaiser Steel Corporation. Apparatus and method for making perforated tube. 4,142,663, Cl. 228-147.000.

Blitzer, Frank: *See—*
Remmell, John A.; Blitzer, Frank; Anderson, Robin L.; and Dietrich, Robert G., 4,142,695, Cl. 244-3.140.

Bloching, Helmut; Krings, Peter; and Pfeiffer, Hans, to Henkel Kommanditgesellschaft auf Aktien. Stabilized liquid enzyme containing compositions. 4,142,999, Cl. 252-544.000.

Blood, Frank X., to ZIT Corporation, The. Golf tee insertion device. 4,142,719, Cl. 273-33.000.

Bloom, Melvin S.; and Regan, Michael T., to Eastman Kodak Company. Photosensitive trans-epindolidione pigment for migration imaging processes. 4,142,890, Cl. 96-1.0PE.

Bobeck, Andrew H., to Bell Telephone Laboratories, Incorporated. Magnetic bubble memory with single level electrically-conducting, drive arrangement. 4,143,419, Cl. 365-19.000.

Bobeck, Andrew H., to Bell Telephone Laboratories Incorporated. Conductor-access, magnetic bubble memory. 4,143,420, Cl. 365-19.000.

Boehringer Mannheim GmbH: *See—*
Wiedemann, Fritz; Kampe, Wolfgang; Thiel, Max; Bartsch, Wolfgang; and Roesch, Egon, 4,143,149, Cl. 424-273.00P.

Boeing Commercial Airplane Company: *See—*
Arnquist, Willard D.; Foster, Thomas G.; and Roalsvig, Melvin J., 4,142,699, Cl. 244-83.00K.

Boeing Company, The: *See—*
Griffith, Thomas; and Campbell, Richard, 4,142,327, Cl. 49-215.000.
Norsworthy, Keith H., 4,143,321, Cl. 325-67.000.

Bohmholdt, Gerd; Deininger, Gunter; Gerlach, Hans-Otto; Hahn, Winfried; and Huwels, Wilhelm, to Veba-Chemie Aktiengesellschaft. Process for the purification of scrubbing solvents by removal of $Ni(CO)_4$. 4,142,875, Cl. 55-72.000.

Bohner, Gunter; and Wolfram, Friedhelm, to Veb Weimar Werk, Stammbetrieb des Veb Weimar Kombinat. Digger assembly for root-crop harvester. 4,142,585, Cl. 171-82.000.

Bolanowski, Lelia A.: *See—*
Marocco, Frank J.; and Bolanowski, Lelia A., 4,142,628, Cl. 206-63.300.

Bolton, Louis F.: *See—*
Walther, William D.; Bolton, Louis F.; and DeRegnaucourt, Robert A., 4,142,569, Cl. 152-409.000.

Bolwin, Heinz: *See—*
Dreyer, Heinz; Bolwin, Heinz; and Hulsmann, Werner, 4,142,685, Cl. 239-655.000.

Bonart, Richard: *See—*
Simm, Walter; Gosling, Claus; Bonart, Richard; and von Falkai, Bela, 4,143,196, Cl. 428-212.000.

Bononi, Walter H. Pad for spectacle frames. 4,142,784, Cl. 351-136.000.

Boral Cyclone Limited: *See—*
Heald, Harold W.; and Norcott, John W., 4,142,749, Cl. 292-189.000.

Borel, Joseph; and Le Goascoz, Vincent, to Commissariat a l'Energie Atomique. Method and device for detecting radiatons. 4,143,266, Cl. 250-211.00J.

Borg-Warner Corporation: *See—*
Spokas, Romas B., 4,142,619, Cl. 192-113.00B.

Borkar, Suresh R.; and Chiodi, Wayne R., to Zenith Radio Corporation. Self converging, north/south pin cushion corrected hybrid yoke. 4,143,346, Cl. 335-213.000.

Bosch, Norbert, to Adolph Saurer Limited. Casting for muffling sound conducted through solids and method for its production and its use. 4,142,605, Cl. 181-204.000.

Bossert, Eduard; and Aumann, Marlies. Device for cleaning surfaces of foods. 4,142,541, Cl. 134-143.000.

Bottum, Edward W. Combined heat pump system and ice making system. 4,142,678, Cl. 237-2.00B.

Bouko, Jean: *See—*
Salvat, Francois; and Bouko, Jean, 4,143,377, Cl. 343-755.000.

Bourgeois, Ronald D. Holding conveyor system. 4,142,625, Cl. 198-570.000.

Bourlet, Maurice V., to Fabrique Nationale Herstal S.A. Visual checking device for machine guns and similar weapons. 4,142,443, Cl. 89-33.00R.

Bournier, Edgar: *See—*
Blanchaud, Maurice; and Bournier, Edgar, 4,143,167, Cl. 426-262.000.

Bowen, Norman D. Spray nozzle insert. 4,142,682, Cl. 239-488.000.

Bowles, Theodore L., to Singer Company, The. Sewing machine patterning means. 4,142,474, Cl. 112-158.00E.

Boyd, Arthur C. Hand truck. 4,142,732, Cl. 280-5.260.

Boyle, John T. A., to John Wyeth & Brother Limited. Anti-ulcer thiazoline derivatives. 4,143,148, Cl. 424-270.000.

Bradley, John J., to Paper Converting Machine Company. Accumulator for wound paper logs. 4.142,626, Cl. 198-796.000.

Braig, Siegfried: *See*—
Osberghaus, Rainer; Lorenz, Peter; Gloxhuber, Christian; and Braig, Siegfried, 4,143,160, Cl. 424-365.000.

Brandriff, Robert C. Sterile thermometer sheath. 4,142,631, Cl. 206-306.000.

Brandrup, Johannes: *See*—
Fischer, Edgar; Brandrup, Johannes; and Weinlich, Jurgen, 4,143,097, Cl. 260-884.000.

Brandtjen, Sheldon J., to Northwest Engineering Company. Linkage mechanism for digging implement. 4,142,308, Cl. 37-103.000.

Brantl, Victor. Reduction of toxic substances in tobacco smoke. 4,142,534, Cl. 131-8.00R.

Brattstrom, Edward H., to Allware Agencies Ltd. Fan blade assemblies for box fans. 4,142,844, Cl. 417-423.00R.

Brede, Uwe: *See*—
Stahlmann, Rudolf; Brede, Uwe; and Homburg, Axel, 4,142,467, Cl. 102-93.000.

Brennan, William E.: *See*—
Fogle, Alva E., Jr.; Brennan, William E.; and Passino, Jacque, 4,142,757, Cl. 296-63.000.

Brewer, John H.; and Harwood, Peter G., to Compagnie Francaise des Petroles. Termination means for a plurality of riser pipes at a floating platform. 4,142,584, Cl. 166-359.000.

Brewster, Roger F.; and Barrett, Alfred H., to General Motors Corporation. Three phase AC to DC voltage converter with power line harmonic current reduction. 4,143,414, Cl. 363-44.000.

Bricot, Claude; and Lehureau, Jean C., to Thomson-Brandt. System for the optical read-out by reflection of a data carrier using half beams. 4,143,402, Cl. 358-128.000.

Brieger, Emmet F. Well tool pack-off with sinker bar release means. 4,142,583, Cl. 166-311.000.

Bright, James A.; and Deaton, Homer W., to General Motors Corporation. Cam controlled switching means for ice maker. 4,142,378, Cl. 62-135.000.

Brill, Klaus; Hurst, Kurt; and Koder, Manfred, to Robert Bosch GmbH. Battery operated electronic alphanumeric permanent recording instrument, such as recording pocket calculator. 4,143,382, Cl. 346-76.00R.

Brimhall, Rulon W. Fence and fence post with removable rail retaining bracket. 4,142,711, Cl. 256-65.000.

Brinser, Stanley B.: *See*—
Barnes, Ronald B.; Brinser, Stanley B.; and Swengel, Robert C., Jr., 4,142,771, Cl. 339-95.00R.

British Steel Corporation: *See*—
McCann, John; and Bagshaw, Trevor, 4,143,258, Cl. 219-73.000.
Polgreen, Geoffrey R., 4,142,469, Cl. 104-148.0MS.

Broeckx, Willy P.; and Dulog, Lothar G., to S.A. Texaco Belgium N.V. Low pour hydrocarbon oil compositions. 4,142,865, Cl. 44-62.000.

Broeksema, Egbert; and Smit, Elzo, to U.S. Philips Corporation. High fidelity phonograph pick-up arm. 4,143,248, Cl. 179-100.40R.

Brois, Stanley J.; Gutierrez, Antonio; and Feldman, Nicholas, to Exxon Research & Engineering Co. Amine salts of thio-bis-lactone acids in combination with coadditive hydrocarbons are flow improvers for middle distillate fuel oils. 4,142,866, Cl. 44-63.000.

Brooks & Perkins, Incorporated: *See*—
Mollon, Leslie, 4,143,276, Cl. 250-507.000.

Bross, Hermann J.: *See*—
Sinn, Gustav; Matner, Martin; and Bross, Hermann J., 4,143,198, Cl. 428-290.000.

Brown, Albert R.: *See*—
Jewell, Steven R.; and Brown, Albert R., 4,142,665, Cl. 229-33.000.

Brown, Boveri & Cie Aktiengesellschaft: *See*—
Fischer, A. G., 4,143,297, Cl. 313-502.000.

Brown, Darrell R. Solar vaporizing chamber. 4,142,512, Cl. 126-271.000.

Brown, Edward G.; Turner, Eric J.; Smithers, Philip G. K., deceased; and Juviller, John J., executor, to Trico Products Corporation. Attachment of windscreen wiper blades to wiper arms. 4,142,268, Cl. 15-250.320.

Brown, Harley: *See*—
Brown, Harley D.; and Brown, Harley, 4,142,552, Cl. 137-446.000.

Brown, Harley D.; and Brown, Harley, to Brown, Harley D. Maximum liquid level control valve. 4,142,552, Cl. 137-446.000.

Brown, Joseph A.: *See*—
Neice, George G.; and Brown, Joseph A., 4,142,351, Cl. 56-202.000.

Brown, Maurice H. Terminal forming and installing apparatus. 4,142,285, Cl. 29-564.600.

Brown, Warren D., to Sprayton Equipment Company. Valve and seal. 4,142,708, Cl. 251-317.000.

Browne, Paul A., to Door-Oliver Incorporated. Barometric leg for rotary vacuum filter. 4,142,976, Cl. 210-404.000.

Brownlee, Robert R.; Tyers, G. Frank O.; and Neff, Paul H., to Research Corporation. Monitoring system for cardiac pacers. 4,142,533, Cl. 128-419.0PT.

Bruce, Walter J.: *See*—
Bruce, Wayne M.; and Bruce, Walter J., 4,142,353, Cl. 57-22.000.

Bruce, Wayne M.; and Bruce, Walter J. Method and apparatus for rigging marine vessels. 4,142,353, Cl. 57-22.000.

Bruchner Apparatebau GmbH: *See*—
Schuierer, Manfred, 4,142,852, Cl. 8-1.0XB.

Brun, Roger: *See*—
Cayzac, Jacques C.; le Can, Claude; Brun, Roger; Devillers, Jacques; and Joinnet, Etienne, 4,143,365, Cl. 340-347.0SH.

Brusselmans, Jacques, to N.V. Raychem S.A. Repairable assembly for protecting a cable junction and method of assembling same. 4,142,592, Cl. 174-92.000.

Bryant, David R., to Union Carbide Corporation. Control of condensation products in hydroformylation process. 4,143,075, Cl. 260-604.0HF.

Buchanan, Stephen D.: *See*—
Johnson, Albert O.; Holiman, William E.; and Buchanan, Stephen D., 4,142,688, Cl. 241-236.000.

Buckley, Keith; and Barker, David, to Mars Limited. Gelatinized animal food product. 4,143,171, Cl. 426-331.000.

Buckley, Keith: *See*—
Mitchell, John R.; Buckley, Keith; and Burrows, Ian E., 4,143,172, Cl. 426-532.000.

Buckley, Lawrence W.: *See*—
Bennett, Richard N.; and Buckley, Lawrence W., 4,142,561, Cl. 141-82.000.

Budnyatsky, David M.: *See*—
Kazanovich, Boleslav B.; Santurian, Germes R.; Fischenko, Petr A.; Potapenko, Iosif A.; Budnyatsky, David M.; Akopdzhanian, Felix K.; Oganesian, Tsolak R.; Kazarian, Edvard S.; Dzhanbaev, Salikh I.; Seryapov, Alexandr I.; Shakhnazarian, Albert T.; Mezhdo, Murad S.; Bachilo, Leverie L.; Bushmin, Anatoly P.; Gershman, Mikhail B.; Samokhvalov, Anatoly I.; and Oganesian, Georgy S., 4,142,579, Cl. 165-84.000.

Buhl, Hans W., to Daimler-Benz Aktiengesellschaft. Piston for internal combustion engine. 4,142,484, Cl. 123-41.350.

Buhrke Industries, Inc.: *See*—
Quaas, Dietmar G., 4,142,398, Cl. 72-481.000.

Bunker Ramo Corporation: *See*—
Bennett, Derek J., 4,143,349, Cl. 340-2.000.

Burk, George A.: *See*—
Goralski, Christian T.; and Burk, George A., 4,143,043, Cl. 260-302.00S.

Burke, Aaron R.; Hough, William V.; and Hefferan, Gerald T., to Mine Safety Appliances Company. Electroless gold plating baths. 4,142,902, Cl. 106-1.230.

Burlet, Gerard, to Robatel S.L.P.I. Continuously operating centrifugal separators. 4,142,669, Cl. 233-7.000.

Burley, David R., to Tile Council of America, Inc. Adhesive joint dressing compositions and methods of using same. 4,143,019, Cl. 260-29.6RW.

Burnham, J. Kellogg. One-piece locking and releasing hub actuated with thrust-multiplying screw assembly. 4,142,811, Cl. 403-290.000.

Burns, Cameron A. Vibrator. 4,142,451, Cl. 91-491.000.

Burroughs Corporation: *See*—
Cooke, Theodore M., 4,142,905, Cl. 106-22.000.
Dear, Frederick H., 4,142,673, Cl. 235-458.000.
Hynd, Martin W.; O'Reilly, James M.; and Murison, Alexander S., 4,142,730, Cl. 274-9.00B.
Knuth, Kenneth V.; and Drinkard, John H., Jr., 4,142,286, Cl. 29-626.000.

Burroughs Wellcome Co.: *See*—
Doubleday, Ian E.; and Lee, Ronald H. D. F., deceased, 4,142,654, Cl. 222-309.000.

Burrows, Ian E.: *See*—
Mitchell, John R.; Buckley, Keith; and Burrows, Ian E., 4,143,172, Cl. 426-532.000.

Burzin, Klaus; Ruter, Jorn; and Feinauer, Roland, to Chemische Werke Huls, AG. Process for production of saturated, high-molecular weight polyesters. 4,143,094, Cl. 260-873.000.

Busdiecker, Wayne S.: *See*—
Washkewicz, Donald E.; and Busdiecker, Wayne S., 4,142,554, Cl. 138-109.000.

Bushmin, Anatoly P.: *See*—
Kazanovich, Boleslav B.; Santurian, Germes R.; Fischenko, Petr A.; Potapenko, Iosif A.; Budnyatsky, David M.; Akopdzhanian, Felix K.; Oganesian, Tsolak R.; Kazarian, Edvard S.; Dzhanbaev, Salikh I.; Seryapov, Alexandr I.; Shakhnazarian, Albert T.; Mezhdo, Murad S.; Bachilo, Leverie L.; Bushmin, Anatoly P.; Gershman, Mikhail B.; Samokhvalov, Anatoly I.; and Oganesian, Georgy S., 4,142,579, Cl. 165-84.000.

Busse, Peter, to Heinze, Richard. Cabinet hinge. 4,142,271, Cl. 16-129.000.

Butler, Alfred Y., Jr.; and Clemons, Harold W., to Exxon Production Research Company. Subsea electrical connector. 4,142,770, Cl. 339-94.00M.

Butler, John P.; Rolston, John H.; den Hartog, James; Molson, Fred W. R.; and Goodale, John W., to Atomic Energy of Canada Limited. Process for the exchange of hydrogen isotopes between streams of gaseous hydrogen and liquid water. 4,143,123, Cl. 423-580.000.

Butter, Johannes A. M.: *See*—
van Konijnenburg, Jan T.; and Butter, Johannes A. M., 4,143,104, Cl. 264-30.000.

Buzzard, Robert J.; and Mohler, Galen E., to Lexel Corporation. Laser plasma tube having internal gas path. 4,143,339, Cl. 331-94.50D.

C. F. Wachendorff GmbH: *See*—
Steinbach, Wilfried, 4,142,738, Cl. 282-27.500.

Cahn, Andre; Sanson, Jacques; Vanspeybroeck, Henri; Dumas, Robert; and Mosse, Michel, to Societe Francaise Duco; and Societe Generale pour l'Emballage. Process for the preparation of a coating for glass or ceramic surfaces. 4,143,181, Cl. 427-195.000.

Cain, William D.; Hall, Denis G.; and Middleton, John D., to Marconi

Instruments Limited. Micro-circuit arrangements. 4,143,342, Cl. 333-33.000.

Calder, William E.; and Robertson, William L. Spectral color generator. 4,142,801, Cl. 356-251.000.

Calderon, Albert. Method and apparatus for quenching coke. 4,142,942, Cl. 201-39.000.

Cale, Albert D., Jr.: *See*—
Welstead, William J., Jr.; and Cale, Albert D., Jr., 4,143,150, Cl. 424-274.000.

Calspan Corporation: *See*—
Rich, Joseph W.; Bergman, Richard C.; and Treanor, Charles E., 4,142,955, Cl. 204-157.10R.

Cameo Curtains, Inc.: *See*—
Heimberg, Eli, 4,142,570, Cl. 160-349.00R.

Campbell, J. Les, to Aluminum Plumbing Fixture Corp. Safety spout for combination toilet and lavatory. 4,142,256, Cl. 4-3.000.

Campbell, John J., to Caterpillar Tractor Co. Control system for auxiliary front wheel drive. 4,142,600, Cl. 180-44.00F.

Campbell, Richard: *See*—
Griffith, Thomas; and Campbell, Richard, 4,142,327, Cl. 49-215.000.

Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See*—
Beaulieu, Jacques, 4,143,337, Cl. 331-94.5PE.

Canadian General Electric Company Limited: *See*—
Klingbeil, Herbert N., 4,143,415, Cl. 364-105.000.

Canadian Patents and Development Limited: *See*—
Rak, Jaromir R., 4,143,010, Cl. 260-23.00S.

Canon Kabushiki Kaisha: *See*—
Matsumoto, Seiichi; Yokota, Hideo; and Matsuda, Mutsuhide, 4,142,788, Cl. 354-53.000.
Suzuki, Ryoichi; Uchiyama, Takashi; Matsumoto, Seiichi; Amikura, Takashi; and Tsunekawa, Tokuichi, 4,142,786, Cl. 354-32.000.
Yamakami, Hiroshi; Mitsuhashi, Yasuo; Tomari, Seiji; and Tsuchiya, Kaichi, 4,142,982, Cl. 252-62.10P.

Capo, James L.; and Daher, James, to International Paper Company; and H. J. Heinz Company. Reclosable box with tear-open spout and blank therefor. 4,142,635, Cl. 206-622.000.

Carder, Charles H.: *See*—
Jenkinson, Richard D.; and Carder, Charles H., 4,143,013, Cl. 260-29.1SB.

Carel, Alfred B.; and Wimberley, Jerry W., to Continental Oil Company. Prevention of color deterioration of diphenylalkanes. 4,143,081, Cl. 260-666.500.

Carl Freudenberg, Firma: *See*—
Kirsch, Wilhelm; Tecl, Bohuslav; and Fahrbach, Erich, 4,142,334, Cl. 51-395.000.

Carl Still, Firma: *See*—
Laufhutte, Dieter; and Gronert, Gunter, 4,143,122, Cl. 423-574.00R.

Carl Still Recklinghausen, Firma: *See*—
Weber, Heinrich; Dungs, Horst; Urbye, Klaus; Beckmann, Franz; Schmauch, Hugo; and Flasche, Karl H., 4,142,941, Cl. 201-6.000.

Carle & Montanari S.p.A.: *See*—
Ripani, Sergio, 4,142,847, Cl. 425-140.000.

Carle, Robert A.; and Hann, Paul D., to Phillips Petroleum Company. Fluid catalytic cracking of amorphous polypropylene. 4,143,086, Cl. 260-683.0PD.

Carley, Harold E.: *See*—
Miller, George A.; Chan, Hak-Foon; and Carley, Harold E., 4,143,137, Cl. 424-245.000.

Carlo Erba S. p. A.: *See*—
Doria, Gianfederica; Romeo, Ciriaco; Lauria, Franceso; and Corno, Maria L., 4,143,145, Cl. 424-263.000.

Carlson, David H. J.; and Deering, James R., to UOP Inc. Process for treating a sour petroleum distillate. 4,142,964, Cl. 208-206.000.

Carlson, Rex G.: *See*—
Dockery, Denzel J.; Dockery, Devan T.; and Carlson, Rex G., 4,142,760, Cl. 296-137.00B.

Carrier Corporation: *See*—
Lavigne, William J., Jr., 4,142,381, Cl. 62-510.000.

Casey, Gary L.; and Tuller, Bruce H., to Bendix Corporation, The. Electric fuel injection valve. 4,142,683, Cl. 239-585.000.

Cashdollar, Kenneth L.; Hertzberg, Martin; and Litton, Charles D., to United States of America, Interior. Multichannel infrared pyrometer. 4,142,417, Cl. 73-355.00R.

Cassella Aktiengesellschaft: *See*—
Bauer, Wolfgang; and Ribka, Joachim, 4,143,033, Cl. 260-155.000.
Honel, Hans; Keller, Karlfried; Michel, Walter; and Schon, Manfred, 4,143,016, Cl. 260-29.40R.

Caterpillar Tractor Co.: *See*—
Campbell, John J., 4,142,600, Cl. 180-44.00F.
Cole, Carroll R., 4,142,309, Cl. 37-126.00R.
Hammond, James T., 4,142,498, Cl. 123-139.0AP.
Hicks, Leon E.; Peterson, Wayne A.; and Schexnayder, Lawrence F., 4,142,842, Cl. 417-288.000.
Johnson, Howard L., 4,142,282, Cl. 29-157.10R.
Lohbauer, Kenneth R., 4,142,445, Cl. 91-6.000.
Myers, Jimmy D., 4,142,642, Cl. 414-719.000.
Sidles, Peter, Jr.; and Mankowski, Aleksander, 4,142,615, Cl. 192-4.00A.
Stevens, W. Gene; and Cobb, Raymond P., 4,142,421, Cl. 74-15.630.

Cavalieri, Vincent J.: *See*—
McCrae, James M.; Irvine, Alexander M.; Macpherson, Ian A.; and Cavalieri, Vincent J., 4,143,058, Cl. 260-438.100.

Cawley, William H.: *See*—
Rowe, Edward A., Jr.; and Cawley, William H., 4,143,205, Cl. 428-469.000.

Cayzac, Jacques C.; le Can, Claude; Brun, Roger; Devillers, Jacques; and Joinnet, Etienne, to U.S. Philips Corporation. Device for the acquisition and storage of an electrical signal. 4,143,365, Cl. 340-347.0SH.

Celanese Corporation: *See*—
DeMartino, Ronald N., 4,143,007, Cl. 260-17.4ST.

Centre de Recherche Metallurgiques-Centrum voor Research in de Metallurgie: *See*—
Paulus, Philippe; and Economopoulos, Marios, 4,143,184, Cl. 427-300.000.

Challine, Andre P. A.; Marchal, Alain M. E.; and Foglia, Vincent F. P., to Compagnie Generale pour les Developpements Operationnels des Richesses sous-Marines "C.G.Doris". Platform for installation at sea or on a body of water. 4,142,819, Cl. 405-196.000.

Chambley, Phillip W.; and Norris, Alan H., to WWG Industries, Inc. Self-twist yarn node fixation apparatus and method. 4,142,355, Cl. 57-293.0AT.

Champion International Corporation: *See*—
Fremont, Henry A., 4,142,967, Cl. 210-23.00F.

Chan, Hak-Foon: *See*—
Miller, George A.; Chan, Hak-Foon; and Carley, Harold E., 4,143,137, Cl. 424-245.000.

Chang, Chin H.; and Longo, John M., to Exxon Research & Engineering Co. Cells having cathodes containing C_2S cathode-active materials. 4,143,214, Cl. 429-112.000.

Chang, Wen-Hsuan; Erikson, J. Alden; and Porter, Samuel, Jr., to PPG Industries, Inc. Composition useful in making extensible films. 4,143,091, Cl. 260-859.00R.

Chang, Yew C.; and Ovshinsky, Stanford R., to Energy Conversion Devices, Inc. Organo tellurium imaging materials. 4,142,896, Cl. 96-48.0HD.

Chapman, Emmett H. Method of playing stringed musical instrument. 4,142,436, Cl. 84-1.160.

Charlot, Jean-Claude: *See*—
Salvaudon, Laurence; and Charlot, Jean-Claude, 4,143,371, Cl. 343-16.00R.
Salvaudon, Laurence; and Charlot, Jean-Claude, 4,143,372, Cl. 343-16.00M.

Chattopadhayhay, Asoke: *See*—
Muller, Hans-Jurgen; and Chattopadhayhay, Asoke, 4,143,102, Cl. 261-50.00A.

Chavis, Yvonne, to Jefferson, Douglas. Simulated blooming flower arrangement. 4,143,191, Cl. 428-13.000.

Chemische Werke Huls, AG: *See*—
Burzin, Klaus; Ruter, Jorn; and Feinauer, Roland, 4,143,094, Cl. 260-873.000.
Feldmann, Rainer; Panoch, Hans-Joachim; Scholten, Heinz; and Feinauer, Roland, 4,143,025, Cl. 260-33.40R.
Ruter, Jorn, 4,143,093, Cl. 260-860.000.

Chen, Herbert: *See*—
Jassawalla, Jal S.; Chen, Herbert; and Olaffson, Ingvar, 4,142,524, Cl. 128-214.00F.

Cherin, Allen H.; and Osborne, Anthony, to Bell Telephone Laboratories, Incorporated. Optical fiber ribbon cartridge connector. 4,142,776, Cl. 350-96.210.

Chernick, Leon, to Hughes Aircraft Company. Adaptive radar systems and methods therefor. 4,143,373, Cl. 343-17.1PF.

Chevron Research Company: *See*—
Duisman, Jack A., 4,143,235, Cl. 136-89.0CD.
Feffer, Philip C., 4,142,280, Cl. 28-254.000.
Jensen, Harbo P., 4,142,961, Cl. 208-91.000.

Chiba, Kazuhiro: *See*—
Tsuiki, Takehiko; Onishi, Ken; Ishida, Yoshinobu; and Chiba, Kazuhiro, 4,143,406, Cl. 360-48.000.

Chilton, James O. Burglar entry stop device. 4,142,752, Cl. 292-343.000.

Chinchen, Godfrey C., to Imperial Chemical Industries Limited. Carbon monoxide shift process. 4,142,988, Cl. 252-373.000.

Chiodi, Wayne R.: *See*—
Borkar, Suresh R.; and Chiodi, Wayne R., 4,143,346, Cl. 335-213.000.

Chleck, David J.: *See*—
Kovac, Michael G.; Chleck, David J.; and Goodman, Philip, 4,143,177, Cl. 427-79.000.

Choinski, Edward J., to Polaroid Corporation. Method and apparatus for coating webs. 4,143,190, Cl. 427-420.000.

CHON Corporation: *See*—
Greene, Andrew E.; and Crabbe, Pierre, 4,143,230, Cl. 562-504.000.

Chuetsu Waukesha Kabushiki Kaisha: *See*—
Hisada, Naoji, 4,142,835, Cl. 416-162.000.

Ciaperoni, Aldemaro; Quaglia, Giuseppe; and Dall'Asta, Gino, to SNIA Viscosa Societa Nazionale Industria Applicazioni Viscosa S.p.A. Copolyester compositions for the production of fibers having high heat stability and resistance to the propagation of the flame, process for making the same, and fibers made from said compositions. 4,143,031, Cl. 260-45.75B.

Ciarcia, Ronald D., to General Electric Company. Arc chute having plates coated with weld deterent material. 4,143,256, Cl. 200-144.00R.

Ciarico, Anthony J.: *See*—
Binard, William J.; Ciarico, Anthony J.; Anglada, Leonard R.; and Patel, Bhupendra C., 4,142,525, Cl. 128-218.00R.

Ciba-Geigy AG: *See*—
Goodall, Charles C. O., 4,142,301, Cl. 34-18.000.

Ciba-Geigy Corporation: *See—*
Hubele, Adolf; Eckhardt, Wolfgang; and Kunz, Walter, 4,143,155, Cl. 424-303.000.
Huber-Nuesch, Wernhard, deceased; Huber, Fabienne, heir; and Huber, Ariane, heir, 4,143,188, Cl. 427-386.000.
Jager, Horst, 4,143,206, Cl. 428-474.000.
McCrae, James M.; Irvine, Alexander M.; Macpherson, Ian A.; and Cavalieri, Vincent J., 4,143,058, Cl. 260-438.100.
Spivack, John D., 4,143,028, Cl. 260-45.95D.

Cieslak, Richard F.; Balding, John V.; and Lafrenz, Joseph, to Industrial Electronics Service Company. Radio receiver monitoring and testing apparatus. 4,143,323, Cl. 325-363.000.

Cinquino, Michael J., to First, Richard S., a part interest. Rear deck mounting adapter for car speaker. 4,143,249, Cl. 179-146.00E.

Citizen Watch Co. Ltd.: *See—*
Ebihara, Heihachiro; Sekiya, Fukuo; and Yamada, Takashi, 4,142,362, Cl. 58-50.00R.
Kimura, Satoshi, 4,142,361, Cl. 58-50.00R.

Ciulla, Stephen B. Method for coating bait. 4,143,161, Cl. 426-1.000.

Claar, Leslie M.; and Johnson, Raymond E., to Parker-Hannifin Corporation. Variable displacement pump control. 4,142,841, Cl. 417-213.000.

Clark, Brian D., to Progressive Electronics, Inc. Circuitry and method for locating buried cable splices. 4,143,251, Cl. 179-175.30A.

Clark, Donald E.: *See—*
Lien, Eric L.; and Clark, Donald E., 4,143,158, Cl. 424-330.000.

Clark, Gaylord J. Brush frame and shell. 4,142,267, Cl. 15-179.000.

Clarke, Edmond C. Drill grinding fixture. 4,142,332, Cl. 51-125.000.

Clayton, Hadwen A.: *See—*
Zahn, Carl W.; and Clayton, Hadwen A., 4,142,876, Cl. 62-37.000.

Clemons, Harold W.: *See—*
Butler, Alfred Y., Jr.; and Clemons, Harold W., 4,142,770, Cl. 339-94.00M.

Clifton, Woodrow W. Fluid current motor. 4,142,832, Cl. 416-117.000.

Cobb, Raymond P.: *See—*
Stevens, W. Gene; and Cobb, Raymond P., 4,142,421, Cl. 74-15.630.

Cobb, Ronald W.: *See—*
Leff, Michael G.; and Cobb, Ronald W., 4,142,634, Cl. 206-392.000.

Coburn, Robert E., to Molins Machine Company, Inc. Slitting apparatus. 4,142,455, Cl. 93-58.20R.

Cohen, Albert: *See—*
Gerspacher, Michel; and Cohen, Albert, 4,143,209, Cl. 428-592.000.

Cohen, Uri. Electrodeposition of polycrystalline silicon from a molten fluoride bath and product. 4,142,947, Cl. 204-39.000.

Cole, Carroll R., to Caterpillar Tractor Co. Scraper bowl-lift apparatus. 4,142,309, Cl. 37-126.00R.

Colgate Palmolive Company: *See—*
Bauman, Robert A., 4,143,127, Cl. 424-54.000.
Gaffar, Maria C., 4,143,126, Cl. 424-49.000.
Kim, Keun Y.; and Crutchfield, Marvin M., 4,143,128, Cl. 424-54.000.

Colla, Jeannine O.; and Thoma, Paul E., to Johnson Controls, Inc. Nitrogen dioxide sensing element and method of sensing the presence of nitrogen dioxide. 4,142,400, Cl. 73-23.000.

Collier, Samuel A. Hydrostatic coupling. 4,142,617, Cl. 192-60.000.

Collu, Carlo: *See—*
Ligorati, Ferdinando; Invernizzi, Renzo; Collu, Carlo; and Fontanesi, Maurizio, 4,142,990, Cl. 252-429.00C.

Colvin, James W. Fish brailer. 4,142,754, Cl. 294-77.000.

Commissariat a l'Energie Atomique: *See—*
Borel, Joseph; and Le Goascoz, Vincent, 4,143,266, Cl. 250-211.00J.
Eyral, Max; and Mahe, Armel, 4,142,937, Cl. 176-87.000.

Compagnie Francaise des Petroles: *See—*
Brewer, John H.; and Harwood, Peter G., 4,142,584, Cl. 166-359.000.

Compagnie Generale d'Electricite S.A.: *See—*
Godard, Bruno; and Gaffard, Jean-Paul, 4,143,338, Cl. 331-94.50C.
Michon, Maurice; and Girard, Genevieve, 4,143,332, Cl. 330-4.300.

Compagnie Generale des Etablissements Michelin: *See—*
Pflieger, Bernard; and Reiniche, Andre, 4,142,920, Cl. 148-12.00B.

Compagnie Generale pour les Developpements Operationnels des Richesses sous-Marines "C.G.Doris": *See—*
Challine, Andre P. A.; Marchal, Alain M. E.; and Foglia, Vincent F. P., 4,142,819, Cl. 405-196.000.

Compagnie Maritime d'Expertise, S.A.: *See—*
Billingsley, Lloyd E., 4,142,739, Cl. 285-18.000.

Compressor Controls Corporation: *See—*
Staroselsky, Naum, 4,142,838, Cl. 417-20.000.

Conant, Frank R.: *See—*
Whelan, Richard H.; and Conant, Frank R., 4,143,175, Cl. 426-582.000.

Connor, Gerald I.: *See—*
Latenser, James S.; Estes, Roger Q.; and Connor, Gerald I., 4,142,529, Cl. 128-401.000.

Conradi, Victor R. Metal bonded abrasive tools. 4,142,872, Cl. 51-309.000.

Construction Products Research, Inc.: *See—*
Gaines, Robert W., 4,142,909, Cl. 106-87.000.

Continental Group, Inc., The: *See—*
Jewell, Steven R.; and Brown, Albert R., 4,142,665, Cl. 229-33.000.
Mascia, Carmen T.; and Hasegawa, Gary K., 4,142,653, Cl. 222-207.000.

Continental Gummi-Werke Aktiengesellschaft: *See—*
Johannsen, Peter; Peter, Julius; and Mauk, Gerhard, 4,142,567, Cl. 152-353.00R.

Continental Oil Company: *See—*
Carel, Alfred B.; and Wimberley, Jerry W., 4,143,081, Cl. 260-666.500.

Contreras Guerrero de Stavropoulos, Elvia E.: *See—*
Stavropoulos, Stamatios M.; and Contreras Guerrero de Stavropoulos, Elvia E., 4,142,517, Cl. 128-2.00B.

Cooke, Theodore M., to Burroughs Corporation. Waterless ink for non-impact jet printers. 4,142,905, Cl. 106-22.000.

Coppa, Anthony P. Three-dimensional folded chain structures. 4,142,321, Cl. 46-1.00L.

Coratomic, Inc.: *See—*
Magovern, George J.; Shipko, Frederick J.; and Roland, George W., 4,142,531, Cl. 128-418.000.

Cornell, Archie R.: *See—*
Hitchcock, William H.; Cornell, Archie R.; and Engel, Joseph C., 4,143,304, Cl. 315-276.000.

Cornett, Gerald W.; and Cornett, Kevin L. Swivel fitting for flexible conduits. 4,142,742, Cl. 285-136.000.

Cornett, Kevin L.: *See—*
Cornett, Gerald W.; and Cornett, Kevin L., 4,142,742, Cl. 285-136.000.

Corning Glass Works: *See—*
Bansal, Bihari; and Spremulli, Paul F., 4,143,232, Cl. 13-6.000.
Janssen Bennynck, Christian M. M., 4,142,744, Cl. 285-368.000.
Olszewski, Anthony R.; and Parnell, Donald R., 4,142,878, Cl. 65-18.000.

Corno, Maria L.: *See—*
Doria, Gianfederica; Romeo, Ciriaco; Lauria, Franceso; and Corno, Maria L., 4,143,145, Cl. 424-263.000.

Cosentino, Louis C., to Renal Systems, Inc. Ultrasonic flow meter. 4,142,414, Cl. 73-216.000.

Cottman, Kirkwood S., to Goodyear Tire & Rubber Company, The. Mercapto phenolic and alkylthio phenolic antioxidants. 4,143,076, Cl. 260-609.00F.

Couchman, William J. R.: *See—*
Morris, William H. D.; and Couchman, William J. R., 4,142,506, Cl. 126-5.000.

Courtright, Burr. Irrigation system and improvement structure therein. 4,142,547, Cl. 137-344.000.

Covic, John: *See—*
Richey, Joseph B.; McBride, Thomas R.; and Covic, John, 4,143,273, Cl. 250-445.00T.

Coviello, John W., to Westinghouse Electric Corp. System for generating line drawing of a scanned image. 4,143,401, Cl. 358-96.000.

Covington, Roger G.; and Miller, Stephen H., to Eastman Kodak Company. Article container for dispensing reagent slides. 4,142,863, Cl. 422-63.000.

Coyne, Brenton S., to Dow Chemical Company, The. Continuous flood foaming of thermoplastic resin. 4,143,106, Cl. 264-51.000.

CPC International Inc.: *See—*
Krisinski, Arthur E.; and Parker, Wilbur A., 4,143,176, Cl. 426-601.000.
Whelan, Richard H.; and Conant, Frank R., 4,143,175, Cl. 426-582.000.

Crabbe, Pierre: *See—*
Greene, Andrew E.; and Crabbe, Pierre, 4,143,230, Cl. 562-504.000.

Crafoord, Carl-Goran: *See—*
Ackerfeldt, Bo I.; Olsson, Curt; and Crafoord, Carl-Goran, 4,142,563, Cl. 150-1.50C.
Ackerfeldt, Bo I.; Olsson, Curt; and Crafoord, Carl-Goran, 4,142,736, Cl. 280-652.000.

Creamer, Edward D.; Krumpelt, Michael; and Jorne, Jacob, to BASF Wyandotte Corporation. Apparatus and process for electrolysis using a cation-permselective membrane and turbulence inducing means. 4,142,950, Cl. 204-96.000.

Crisp, Stephen; and Wilson, Alan D., to National Research Development Corporation. Cements. 4,143,018, Cl. 260-29.60M.

Crocker, Zenas, to Lewis Specialties Limited. Apparatus and process for fluxing a mixable thermoplastic material. 4,142,804, Cl. 366-77.000.

Cronin, Michael J., to Lockheed Aircraft Corporation. Electric power system control utilizing low level signals and miniature gage wiring. 4,143,410, Cl. 361-93.000.

Crouch, Robert D.: *See—*
Stavropoulos, William S.; and Crouch, Robert D., 4,142,938, Cl. 195-63.000.

Crowley, Francis X. Concrete tank joint. 4,142,339, Cl. 52-224.000.

Crutchfield, Marvin M.: *See—*
Kim, Keun Y.; and Crutchfield, Marvin M., 4,143,128, Cl. 424-54.000.

CSF-Compagnie Generale de Telegraphie Sans Fil: *See—*
Orieux, Francois, 4,143,351, Cl. 340-6.00R.

Cuerden, Brian: *See—*
Rybicki, Robert C.; and Cuerden, Brian, 4,142,833, Cl. 416-134.00A.

Culbertson, Richard, to General Electric Company. Cabinet latch assembly. 4,142,660, Cl. 224-45.00P.

Curtiss, Walter W., Jr., to Goodyear Tire & Rubber Company, The. Method of fabricating large tires. 4,142,930, Cl. 156-123.00R.

Cutting, Alan B.; and Tyzack, Donald E., to E M I-Varian Limited. Spin tuned magnetrons. 4,143,300, Cl. 315-39.610.

CVP Systems, Inc.: *See—*
Gidewall, Kenneth L.; and Proce, James, 4,142,453, Cl. 93-36.010.

Czerwinski, Frank G., to Stanley Works, The. Coilable rule. 4,142,693, Cl. 242-107.000.

Daher, James: *See—*
Capo, James L.; and Daher, James, 4,142,635, Cl. 206-622.000.

Dahl, Norman C. Method for creating overload protection against yielding in bolts. 4,142,266, Cl. 10-27.00R.

Daidotokushuko Kabushikikaisha: *See—*
Yano, Junichi; and Eguchi, Isamu, 4,142,479, Cl. 118-623.000.

Daikin Kogyo Co. Ltd.: *See—*
Kato, Kaoru; and Yamashita, Yasuhiko, 4,142,372, Cl. 62-78.000.

Daimler-Benz Aktiengesellschaft: *See—*
Andres, Rudolf, 4,142,692, Cl. 242-107.000.
Buhl, Hans W., 4,142,484, Cl. 123-41.350.
Klie, Wolfgang; Fischer, Wolfgang; and Weisshappel, Helmut, 4,142,753, Cl. 293-102.000.
Scholz, Hansjurgen; Jahn, Walter; and Gimbel, Jurgen, 4,142,274, Cl. 24-163.00R.
Steinecke, Rudolf; Gobke, Otto; and Gern, Klaus, 4,142,488, Cl. 123-99.000.

Dake, Nolan. Transfer mechanism. 4,142,641, Cl. 414-541.000.

Dakin, James T.; Darrow, Kenneth A.; and Muth, Myron C., to General Electric Company. Liquid-cooled turbine bucket with enhanced heat transfer performance. 4,142,831, Cl. 416-96.00A.

Dall'Asta, Gino: *See—*
Ciaperoni, Aldemaro; Quaglia, Giuseppe; and Dall'Asta, Gino, 4,143,031, Cl. 260-45.75B.

Dalton, Raymond F., to Imperial Chemical Industries Limited. Copper extraction with salicylaldoxime-P-nonylphenol mixtures. 4,142,952, Cl. 204-106.000.

Damman, Cornelis C., to Holland Mechanics B.V. Apparatus for forming circularly bent articles from a straight profiled strip. 4,142,394, Cl. 72-220.000.

Danfoss A/S: *See—*
Dyhr, Jan; and Nissen, Ole J., 4,142,380, Cl. 62-471.000.

Darrouzet, John L., to United States of America, Transportation. Pendulum antenna. 4,143,378, Cl. 343-854.000.

Darrow, Kenneth A.: *See—*
Dakin, James T.; Darrow, Kenneth A.; and Muth, Myron C., 4,142,831, Cl. 416-96.00A.

Daswick, Alexander C. Foldable package for meat sandwich. 4,143,165, Cl. 426-113.000.

David Brown Sadi S.A.: *See—*
Dekoninck, Jean, 4,142,616, Cl. 192-56.00R.

Davidson, Bruce L.: *See—*
Peake, Clinton J.; Harnish, Wayne N.; and Davidson, Bruce L., 4,143,138, Cl. 424-246.000.

Daviot, Jean; and Marchais, Michel, to Groupement pour les Activites Atomiques et Avancees. Refractory insulating products having controlled porosity and the preparing thereof by the wet method. 4,142,908, Cl. 106-64.000.

Davis, Allen V. C. Two-stroke engine and direct thrust piston. 4,142,500, Cl. 123-193.00P.

Davis, Frank E. Billiard ball. 4,142,720, Cl. 273-59.00A.

Davis, H. Dean; and Kapur, Desh K., to Lear Siegler, Inc. Centrifugal pump for high V/L performance. 4,142,839, Cl. 417-89.000.

Davis, Manfred, to Transcience Industries, Inc. Transistorized superregenerative radio frequency detector. 4,143,324, Cl. 325-429.000.

Davis, Thomas F., to AMP Incorporated. Process for electroless copper deposition from an acidic bath. 4,143,186, Cl. 427-345.000.

Davydovskaya, Julia A.: *See—*
Ostrovskaya, Vera M.; Lushina, Olga T.; Dziomko, Vladimir M.; and Davydovskaya, Julia A., 4,143,049, Cl. 260-308.00D.

Dayton Steel Foundry Company (Dayton-Walther Corporation), The: *See—*
Walther, William D.; Bolton, Louis F.; and DeRegnaucourt, Robert A., 4,142,569, Cl. 152-409.000.

Deal, Clarence D., to Electromeasures, Inc. Water well draw down monitoring system. 4,142,411, Cl. 73-155.000.

Dear, Frederick H., to Burroughs Corporation. Document hole mask circuitry. 4,142,673, Cl. 235-458.000.

Deaton, Homer W.: *See—*
Bright, James A.; and Deaton, Homer W., 4,142,378, Cl. 62-135.000.
Weibel, John, Jr.; Deaton, Homer W.; and Beard, Dale A., 4,142,373, Cl. 62-138.000.

DeBello, Patrick M.: *See—*
Manring, William H.; DeBello, Patrick M.; and Imperato, Eugene G., 4,142,907, Cl. 106-52.000.

De Biasi, Joseph T., to Professional Packaging Limited. Apparatus and method for applying closures to bags and the like. 4,142,346, Cl. 53-416.000.

DeCarlo, Nicholas. Water pipe. 4,142,536, Cl. 131-173.000.

Deering, James R.: *See—*
Carlson, David H. J.; and Deering, James R., 4,142,964, Cl. 208-206.000.

Degremont: *See—*
Le Fur, Jean; and Haas, Rene, 4,142,971, Cl. 210-77.000.
Le Fur, Jean; and Durot, Jean, 4,142,977, Cl. 210-519.000.

Deininger, Gunter: *See—*
Bohmholdt, Gerd; Deininger, Gunter; Gerlach, Hans-Otto; Hahn, Winfried; and Huwels, Wilhelm, 4,142,875, Cl. 55-72.000.

De Jage, Evert; and De Visser, Jacob, to Akzona Incorporated. Method of contraception. 4,143,136, Cl. 424-240.000.

Dekoninck, Jean, to David Brown Sadi S.A. Torque-limiting devices. 4,142,616, Cl. 192-56.00R.

DeMartino, Ronald N., to Celanese Corporation. Thickening agent containing a polygalactomannan gum and a copolymer of an olefinically unsaturated dicarboxylic acid anhydride useful in hydraulic well-treating. 4,143,007, Cl. 260-17.4ST.

Demirel, Turgut: *See—*
Lohnes, Robert A.; and Demirel, Turgut, 4,142,403, Cl. 73-76.000.

den Hartog, James: *See—*
Butler, John P.; Rolston, John H.; den Hartog, James; Molson, Fred W. R.; and Goodale, John W., 4,143,123, Cl. 423-580.000.

Depey, Maurice: *See—*
Tonnel, Eugene; and Depey, Maurice, 4,143,421, Cl. 365-180.000.

Deplante, Michel; and Minesi, Didier, to Engins Matra. Control for variable reluctance motors. 4,143,308, Cl. 318-138.000.

DeRegnaucourt, Robert A.: *See—*
Walther, William D.; Bolton, Louis F.; and DeRegnaucourt, Robert A., 4,142,569, Cl. 152-409.000.

Desaulniers, Charles W.: *See—*
Rigopulos, Peter N.; Desaulniers, Charles W.; and Doucette, David E., 4,143,203, Cl. 428-407.000.

de Simone, Gary J., to United Technologies Corporation. Helicopter blade. 4,142,837, Cl. 416-223.00R.

Detroit Tool & Engineering Co.: *See—*
Miner, Earl L., 4,142,586, Cl. 172-42.000.

Deveney, Charles H.; and Kolakowski, Ronald L., to Aluminum Company of America. Blanking and forming tapered wall articles. 4,142,396, Cl. 72-329.000.

Devillers, Jacques: *See—*
Cayzac, Jacques C.; le Can, Claude; Brun, Roger; Devillers, Jacques; and Joinnet, Etienne, 4,143,365, Cl. 340-347.0SH.

De Visser, Jacob: *See—*
De Jage, Evert; and De Visser, Jacob, 4,143,136, Cl. 424-240.000.

Devon Industries, Inc.: *See—*
Sandel, Dan S., 4,142,632, Cl. 206-363.000.

Dewey, Frank. Polyurethane-epoxy casting resin. 4,143,009, Cl. 260-18.0PT.

Diamond Shamrock Corporation: *See—*
Rowe, Edward A., Jr.; and Cawley, William H., 4,143,205, Cl. 428-469.000.

Diazit Company, Inc.: *See—*
Neeb, Robert P.; Patrick, Henry W.; and Mumford, Ray H., 4,142,790, Cl. 354-318.000.

Dichter, Hans-Joachim. Machine for working glass tubes and in particular for making containers from glass tubes. 4,142,883, Cl. 65-276.000.

Diepeveen, John C. Wire clamp. 4,142,714, Cl. 269-8.000.

Dieterich, Dieter, to Bayer Aktiengesellschaft. Stabilized preparations of aromatic isocyanato sulphonic acids. 4,143,062, Cl. 260-453.0SP.

Dietrich, Robert G.: *See—*
Remmell, John A.; Blitzer, Frank; Anderson, Robin L.; and Dietrich, Robert G., 4,142,695, Cl. 244-3.140.

DiMaria, Donelli J.; and Young, Donald R., to International Business Machines Corporation. High field capacitor structure employing a carrier trapping region. 4,143,393, Cl. 357-52.000.

Diver, James J.; Heide, Henry A.; and Masse, Basil J., to Velten & Pulver, Inc. Bread accumulator. 4,142,624, Cl. 198-425.000.

Dixon, Robert L.; Maxsted, Malcolm D.; and Kellner, Jackson M., to Smith International, Inc. Raise drill inner yoke bridge. 4,142,593, Cl. 175-53.000.

Dlugos, Daniel F., to Pitney-Bowes, Inc. Optical displacement measuring system. 4,143,364, Cl. 340-347.00P.

Dmitriev, Mikhail E.: *See—*
Vereschagin, Leonid F.; Semerchan, Aik A.; Gankevich, Tamara T.; Dmitriev, Mikhail E.; and Modenov, Vitaly P., 4,142,869, Cl. 51-295.000.

Dockery, Denzel J.; Dockery, Devan T.; and Carlson, Rex G. Vehicle cover with hold down means. 4,142,760, Cl. 296-137.00B.

Dockery, Devan T.: *See—*
Dockery, Denzel J.; Dockery, Devan T.; and Carlson, Rex G., 4,142,760, Cl. 296-137.00B.

Dokoupil, Jiri. Throughpass leather working machine, especially an embossing and ironing machine. 4,142,386, Cl. 69-43.000.

Dolan, Adelbert H. Sluice box. 4,142,965, Cl. 209-487.000.

Dolev, Moshe: *See—*
Bahry, Abraham; and Dolev, Moshe, 4,142,389, Cl. 70-359.000.

Dombrowski, Otto: *See—*
Koppers, Manfred; and Dombrowski, Otto, 4,142,449, Cl. 91-468.000.

Dominion Engineering Works Limited: *See—*
Koeller, Paul, 4,142,825, Cl. 415-116.000.
Koeller, Paul, 4,142,826, Cl. 415-116.000.

Dondero, Eleanor A. Guisti: *See—*
Guisti, Vito, 4,142,367, Cl. 60-325.000.

Door-Oliver Incorporated: *See—*
Browne, Paul A., 4,142,976, Cl. 210-404.000.

Doria, Gianfederica; Romeo, Ciriaco; Lauria, Franceso; and Corno, Maria L., to Carlo Erba S. p. A. Substituted 2-vinyl-chromones and process for their preparation. 4,143,145, Cl. 424-263.000.

Doring, Erich. Ground stabilization arrangement for dam embankments and other terrain slopes and the like. 4,142,821, Cl. 405-258.000.

Doss, Richard C.; and Williams, Ralph P., to Phillips Petroleum Company. Heavy residue from hydrogenation of branched aliphatic dinitriles for curing epoxy resins. 4,143,000, Cl. 528-123.000.

Doss, Roger A., to P&D Products, Inc. Lister stabilizer. 4,142,588, Cl. 172-190.000.

Dotter, Berton E., Jr., to GTE Automatic Electric Laboratories, Inc. Nonuniform translation between analog and digital signals by a piece-wise linear process. 4,143,363, Cl. 340-347.0AD.

Doubleday, Ian E.; and Lee, Ronald H. D. F., deceased (by Lee,

Stephen R. H., executor), to Burroughs Wellcome Co. Adjustable stroke hand operated liquid dispenser. 4,142,654, Cl. 222-309.000.
Doucette, David E.: *See—*
Rigopulos, Peter N.; Desaulniers, Charles W.; and Doucette, David E., 4,143,203, Cl. 428-407.000.
Dougan, Roger W.: *See—*
Ansted, Roger C.; and Dougan, Roger W., 4,142,374, Cl. 62-155.000.
Doughty, Ralph O.; and Goodwin, Donald W., to General Dynamics Corporation. Solar radiation collector devices and systems. 4,142,511, Cl. 126-271.000.
Dover Corporation: *See—*
Murray, Robert L., 4,142,562, Cl. 141-206.000.
Dow Chemical Company, The: *See—*
Asperger, Robert G.; Krawczyk, Leroy S.; and Oakes, Billy D., 4,143,119, Cl. 423-226.000.
Beaver, Richard N.; and Becker, Charles W., 4,142,951, Cl. 204-98.000.
Coyne, Brenton S., 4,143,106, Cl. 264-51.000.
Garrett, Walter L., 4,143,021, Cl. 260-29.60E.
Gibbs, Marylu B.; and Liu, Gordon, 4,143,078, Cl. 260-653.600.
Goralski, Christian T.; and Burk, George A., 4,143,043, Cl. 260-302.00S.
Kalcevic, Victor, 4,143,066, Cl. 562-513.000.
Kobel, Erwin H., deceased; and Yoshimine, Masao, 4,142,943, Cl. 203-6.000.
Stavropoulos, William S.; and Crouch, Robert D., 4,142,938, Cl. 195-63.000.
Tobol, Helen K.; and Noveroske, Robert L., 4,143,144, Cl. 424-263.000.
Wagner, Eugene R.; and McDermott, Roger D., 4,143,151, Cl. 424-275.000.
Downie, Robert H., to Moore Business Forms, Inc. Method for information processing. 4,143,381, Cl. 346-1.000.
Draper, Harold E., to Draper, Michael; and Draper, Harold Elmer, Jr. Automatic trimming device for laminated boards. 4,142,444, Cl. 90-15.00R.
Draper, Harold Elmer, Jr.: *See—*
Draper, Harold E., 4,142,444, Cl. 90-15.00R.
Draper, Michael: *See—*
Draper, Harold E., 4,142,444, Cl. 90-15.00R.
Dressel, Michael O.; and Varner, Horace M., to Bendix Corporation, The. Drive link permitting feed and rotation of drills of various sizes. 4,142,596, Cl. 175-113.000.
Dreyer, Heinz; Bolwin, Heinz; and Hulsmann, Werner, to Amazonen-Werke H. Dreyer. Machine for the pneumatic spreading of granular material. 4,142,685, Cl. 239-655.000.
Drinkard, John H., Jr.: *See—*
Knuth, Kenneth V.; and Drinkard, John H., Jr., 4,142,286, Cl. 29-626.000.
Drobot, Adam T.: *See—*
Sprangle, Phillip A.; Drobot, Adam T.; and Manheimer, Wallace M., 4,143,299, Cl. 315-5.410.
Du Pont of Canada Limited: *See—*
Pilgrim, James F.; and Hunter, Ronald A., 4,143,187, Cl. 427-358.000.
Duarte, John S.: *See—*
Beck, Robert W.; and Duarte, John S., 4,142,747, Cl. 292-37.000.
Dubin, Robert R.: *See—*
Dunn, Bruce S.; and Dubin, Robert R., 4,142,945, Cl. 204-16.000.
Duckworth, George; and James, David R., to Marconi Company Limited, The. Stabilized platforms. 4,143,312, Cl. 318-649.000.
Ducret, Lucien C. Welded armor cutting tool. 4,142,290, Cl. 30-90.900.
Duemmel, Karl-Heinz: *See—*
Landwehr, Goetz; Lux, Helmut; and Duemmel, Karl-Heinz, 4,142,607, Cl. 181-259.000.
Duisman, Jack A., to Chevron Research Company. Cadmium sulfide photovoltaic cell and method of fabrication. 4,143,235, Cl. 136-89.0CD.
Dulog, Lothar G.: *See—*
Broeckx, Willy P.; and Dulog, Lothar G., 4,142,865, Cl. 44-62.000.
Dumas, Robert: *See—*
Cahn, Andre; Sanson, Jacques; Vanspeybroeck, Henri; Dumas, Robert; and Mosse, Michel, 4,143,181, Cl. 427-195.000.
Duncan, David J., to Uniroyal Limited. Method of preparing a thermoplastic elastomeric blend of monoolefin copolymer rubber and polyolefin resin. 4,143,099, Cl. 260-897.00A.
Dungs, Horst: *See—*
Weber, Heinrich; Dungs, Horst; Urbye, Klaus; Beckmann, Franz; Schmauch, Hugo; and Flasche, Karl H., 4,142,941, Cl. 201-6.000.
Dunlop Limited: *See—*
Shaw, Michael; and Haines, Robert C., 4,142,727, Cl. 273-232.000.
Dunn, Bruce S.; and Dubin, Robert R., to General Electric Company. Method of forming a composite body and method of bonding. 4,142,945, Cl. 204-16.000.
Dunn, Bruce S., to General Electric Company. Method of bonding a metallic element to a solid ion-conductive electrolyte material element. 4,142,946, Cl. 204-16.000.
Du Pont de Nemours, E. I., and Company: *See—*
Bellina, Russell F.; and Fost, Dennis L., 4,143,157, Cl. 424-314.000.
Fang, James C., 4,143,204, Cl. 428-413.000.
Fremont, Joseph M., 4,143,231, Cl. 568-855.000.
Stefancsik, Ernest A., 4,143,036, Cl. 260-202.000.
Verma, Monica H., 4,143,012, Cl. 260-23.0ST.
Duro-Test Corporation: *See—*
Strauss, Herbert S.; and Sheinberg, Lawrence, 4,143,301, Cl. 315-73.000.
Durot, Jean: *See—*
Le Fur, Jean; and Durot, Jean, 4,142,977, Cl. 210-519.000.
Duym, Arthur. Energy conserving fume hood. 4,142,458, Cl. 98-115.0LH.
Dwight, Austin E.: *See—*
Gruen, Dieter M.; Mendelsohn, Marshall H.; and Dwight, Austin E., 4,142,300, Cl. 34-15.000.
Dworetzky, Alan H.: *See—*
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Dydyk, Michael, to Motorola Inc. Microwave/millimeter wave oscillator. 4,143,334, Cl. 331-56.000.
Dyhr, Jan; and Nissen, Ole J., to Danfoss A/S. Encapsulated refrigerator. 4,142,380, Cl. 62-471.000.
Dynamit Nobel Aktiengesellschaft: *See—*
Ballreich, Kurt; Jensen, Ernst; Ketterl, Alfred; and Stahlmann, Rudolf, 4,142,466, Cl. 102-87.000.
Stahlmann, Rudolf; Brede, Uwe; and Homburg, Axel, 4,142,467, Cl. 102-93.000.
Dyroff, David R.; and Suchanek, Walton F., Jr., to Monsanto Company. Calculus-inhibiting compositions and method. 4,143,125, Cl. 424-48.000.
Dzhanbaev, Salikh I.: *See—*
Kazanovich, Boleslav B.; Santurian, Germes R.; Fischenko, Petr A.; Potapenko, Iosif A.; Budnyatsky, David M.; Akopdzhanian, Felix K.; Oganesian, Tsolak R.; Kazarian, Edvard S.; Dzhanbaev, Salikh I.; Seryapov, Alexandr I.; Shakhnazarian, Albert T.; Mezhdo, Murad S.; Bachilo, Leverie L.; Bushmin, Anatoly P.; Gershman, Mikhail B.; Samokhvalov, Anatoly I.; and Oganesian, Georgy S., 4,142,579, Cl. 165-84.000.
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E M I-Varian Limited: *See—*
Cutting, Alan B.; and Tyzack, Donald E., 4,143,300, Cl. 315-39.610.
E. R. Squibb & Sons, Inc.: *See—*
Sprague, Peter W., 4,143,054, Cl. 260-346.220.
Earle, Ernest L., Jr.: *See—*
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Eastman Kodak Company: *See—*
Baigrie, Brian D.; Bailey, Joseph; Johnston, Linda G.; and Mijovic, Miroslav V., 4,142,891, Cl. 96-29.00D.
Bloom, Melvin S.; and Regan, Michael T., 4,142,890, Cl. 96-1.0PE.
Covington, Roger G.; and Miller, Stephen H., 4,142,863, Cl. 422-63.000.
Holstead, Colin; Kilminster, Kenneth N.; and Simons, Michael J., 4,142,901, Cl. 96-139.000.
Maskasky, Joe E., 4,142,900, Cl. 96-94.00R.
Phillips, Bobby M., 4,142,850, Cl. 425-461.000.
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Eaton Corporation: *See—*
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Ebauches Tavannes S.A.: *See—*
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Eberhart Glass Blowing Ltd.: *See—*
Eberhart, Wolfgang R., 4,142,383, Cl. 63-23.000.
Eberhart, Wolfgang R., to Eberhart Glass Blowing Ltd. Liquid filled sealed glass ornament and method. 4,142,383, Cl. 63-23.000.
Eberspacher, J.: *See—*
Gaysert, Gerhard, 4,143,117, Cl. 422-179.000.
Ebert, Michael: *See—*
Reick, Franklin G., 4,142,724, Cl. 273-109.000.
Ebihara, Heihachiro; Sekiya, Fukuo; and Yamada, Takashi, to Citizen Watch Co. Ltd. Digital display timepiece. 4,142,362, Cl. 58-50.00R.
Eckart, Frederick; Elliott, Raymond A.; and Feigl, Christopher H., to United Technologies Corporation. Apparatus useful for exposing a circumferential path around a workpiece to tool means. 4,143,261, Cl. 219-121.00L.
Eckhardt, Wolfgang: *See—*
Hubele, Adolf; Eckhardt, Wolfgang; and Kunz, Walter, 4,143,155, Cl. 424-303.000.
Economopoulos, Marios: *See—*
Paulus, Philippe; and Economopoulos, Marios, 4,143,184, Cl. 427-300.000.
Edwards, Carl D.: *See—*
Anderson, Duane B.; and Edwards, Carl D., 4,142,595, Cl. 175-72.000.
Eguchi, Isamu: *See—*
Yano, Junichi; and Eguchi, Isamu, 4,142,479, Cl. 118-623.000.
Ehler, Martin, to Matth. Hohner AG. Mount for harmonica reed or the like. 4,142,438, Cl. 84-360.000.
Ehrat, Kurt; Mast, Fred; Huber, Ernst; and Huber, Josef, to Gretag Aktiengesellschaft. Method and apparatus for testing the print quality of printed texts, more particularly banknotes. 4,143,279, Cl. 250-556.000.
Eibl, Heinz: *See—*
Hatz, Ernst; Eibl, Heinz; and Absenger, Erich, 4,142,503, Cl. 123-198.00D.
Eichweber, Kurt. Receiver-transmitter device for transmitting data by means of focused modulated, light beams. 4,143,263, Cl. 250-199.000.

Eisen- und Drahtwert Erlau Aktiengesellschaft: *See—*
Muller, Anton; and Magiera, Helmut, 4,142,808, Cl. 403-166.000.
Eisenberg, Bernard C., to Solbern Corp. Open-type filling machine. 4,142,560, Cl. 141-12.000.
Electric Power Research Institute, Inc.: *See—*
Glenn, Robert G., 4,142,836, Cl. 416-193.00A.
Perry, Elijah R.; and Rabinowitz, Mario, 4,142,576, Cl. 165-45.000.
Electro-Chlor Corporation: *See—*
McCallum, John, 4,142,959, Cl. 204-286.000.
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Eli Lilly and Company: *See—*
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Thompson, Gerald L., 4,143,041, Cl. 260-244.400.
Williams, James C., 4,143,073, Cl. 260-574.000.
Elliott, Raymond A.: *See—*
Eckart, Frederick; Elliott, Raymond A.; and Feigl, Christopher H., 4,143,261, Cl. 219-121.00L.
Ellis, Jeffrey R.; and Wagner, Herman B., to Tile Council of America, Inc. Sag resistant adhesive compositions. 4,142,911, Cl. 106-97.000.
Elofson, Richard M.; and Gadallah, Fahmi F., to Research Council of Alberta, The. Transition metal catalyst. 4,142,993, Cl. 252-447.000.
Elscint Ltd.: *See—*
Klein, Yitzhak; and Inbar, Dan, 4,143,271, Cl. 250-368.000.
EM Systems, Inc.: *See—*
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Emmons, William D.; and Swift, Graham, to Rohm and Haas Company. Copolymers of sulfonic acid monomers. 4,143,020, Cl. 260-29.6SQ.
Energy Conversion Devices, Inc.: *See—*
Chang, Yew C.; and Ovshinsky, Stanford R., 4,142,896, Cl. 96-48.0HD.
Izu, Masatsugu, 4,142,898, Cl. 96-75.000.
Engel, Joseph C.: *See—*
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Engelhard Minerals & Chemicals Corporation: *See—*
Biondo, Joseph G.; and Savarese, Salvatore L., 4,142,629, Cl. 206-219.000.
Rosynsky, Victor; and Stawsky, Alfred, 4,142,864, Cl. 422-179.000.
Engh, Ian B.: *See—*
Karl, Robert D.; Engh, Ian B.; and Bennison, Harry, 4,142,767, Cl. 339-1.00R.
Engins Matra: *See—*
Deplante, Michel; and Minesi, Didier, 4,143,308, Cl. 318-138.000.
Engler, Edward M.; and Kaufman, Frank B., to International Business Machines Corporation. Reversible electrochromic display device having memory. 4,142,783, Cl. 350-357.000.
Ensminger, Paul W.; and Hamill, Robert L., to Eli Lilly and Company. Method of treating acne with antibiotic A201A. 4,143,141, Cl. 424-253.000.
Enterprise d'Equipments Mecaniques et Hydrauliques E.M.H.: *See—*
Tuson, Samuel, 4,142,820, Cl. 405-202.000.
Epps, Jackie R.: *See—*
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Erikson, J. Alden: *See—*
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Ermeto-Armaturen GmbH: *See—*
Fiala, Othmar, 4,142,741, Cl. 285-39.000.
ERMI: *See—*
Pradon, Jacques, 4,142,623, Cl. 198-410.000.
Erwin, Louis R., to Bendix Corporation, The. Rack and pinion power steering gear. 4,142,448, Cl. 91-372.000.
Erwin Sick Gessellschaft mit beschrankter Haftung Optik-Electronik: *See—*
Schestag, Rudolf, 4,143,367, Cl. 340-540.000.
Esaki, Hideya; Hirao, Takashi; and Kawakami, Hakuhei, to Matsushita Electric Industrial Co., Ltd. MOS type semiconductor device. 4,143,388, Cl. 357-23.000.
Eschweiler Bergwerks-Vereins: *See—*
Laufhutte, Dieter; and Gronert, Gunter, 4,143,122, Cl. 423-574.00R.
Essilor International (Compagnie Generale d'Optique), a French Societe Anonyme: *See—*
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Ethyl Corporation: *See—*
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EUTECO S.p.A.: *See—*
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Exxon Production Research Company: *See—*
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Brois, Stanley J.; Gutierrez, Antonio; and Feldman, Nicholas, 4,142,866, Cl. 44-63.000.
Chang, Chin H.; and Longo, John M., 4,143,214, Cl. 429-112.000.
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Lundberg, Robert D.; and Makowski, Henry S., 4,143,185, Cl. 427-314.000.
Murphy, Raymond F., 4,143,098, Cl. 260-888.000.
Smith, Hosea E., 4,142,578, Cl. 165-81.000.
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Riva, Charles E., 4,142,796, Cl. 356-28.000.
Eyral, Max; and Mahe, Armel, to Commissariat a l'Energie Atomique. Device for providing a leak-tight penetration for electric cables through a reactor vault roof. 4,142,937, Cl. 176-87.000.
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Asano, Masaharu; Fujishiro, Takeshi; Aono, Shigeo; Hosaka, Akio; Manaka, Nobuzi; and Ezoe, Mituhiko, 4,142,482, Cl. 123-32.0EE.
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Bourlet, Maurice V., 4,142,443, Cl. 89-33.00R.
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Mallozzi, Philip J.; Epstein, Harold M.; Jung, Richard G.; Applebaum, David C.; Fairand, Barry P.; Gallagher, William J.; Uecker, Ronald L.; and Muckerheide, Myron C., 4,143,275, Cl. 250-503.000.
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Fantuzzo, Joseph, to Xerox Corporation. Toner dispensing and supply arrangement. 4,142,655, Cl. 222-318.000.
Faul, Wolfgang; and Kastening, Bertel, to Kernforschungsanlage Julich GmbH. Process for producing an electrode for use in the electrolytic generation of hydrogen peroxide. 4,142,949, Cl. 204-84.000.
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Feffer, Philip C., to Chevron Research Company. Bounce crimp unit with annularly segmented yarn receiver. 4,142,280, Cl. 28-254.000.
Feige, Norman G., to Titanium Fabrication Corporation. Method of joining titanium clad steel plates. 4,142,664, Cl. 228-165.000.
Feigl, Christopher H.: *See—*
Eckart, Frederick; Elliott, Raymond A.; and Feigl, Christopher H., 4,143,261, Cl. 219-121.00L.
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Fenelon, John E. Ash tray. 4,142,537, Cl. 131-240.0GG.
Fenne, Ivor; and Lakra, Paul, to Lucas Industries Limited. Sensing device for liquids. 4,142,419, Cl. 73-440.000.
Ferguson, Robert K. Massaging apparatus. 4,142,519, Cl. 128-57.000.
Feroy, Arne. Adjustment means for achieving equal crankpin loading in a controllable pitch propeller mechanism. 4,142,834, Cl. 416-157.00R.
Ferris, James E.: *See—*
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Fiala, Othmar, to Ermeto-Armaturen GmbH. Pivotal screwed fitting. 4,142,741, Cl. 285-39.000.
Filippov, Andrei N.; Nechaev, Alexandr N.; and Sokolsky, Vladimir I., to Tsentralny Nauchno-Issledovatelsky Avtomobilny I Avtomotorny Institut Nami. End-type seal. 4,142,731, Cl. 277-96.100.
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Alafandi, Hamid, 4,142,994, Cl. 252-450.000.
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Findeisen, Kurt, to Bayer Aktiengesellschaft. Process for the preparation of acyl cyanide compounds. 4,143,068, Cl. 260-545.00R.

Finucane, Thomas P.; Earle, Ernest L., Jr.; and Dworetzky, Alan H., to General Foods Corporation. Method of making a non-foaming low-calorie sweetening composition. 4,143,170, Cl. 426-329.000.

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Firmenich S.A.: *See—*
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First, Richard S.: *See—*
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Fischer, A. G., to Brown, Boveri & Cie Aktiengesellschaft. Information display panel with zinc sulfide powder electroluminescent layers. 4,143,297, Cl. 313-502.000.

Fischer, Edgar; Brandrup, Johannes; and Weinlich, Jurgen, to Hoechst Aktiengesellschaft. Process for the manufacture of vinyl chloride polymers. 4,143,097, Cl. 260-884.000.

Fischer, Wolfgang: *See—*
Klie, Wolfgang; Fischer, Wolfgang; and Weisshappel, Helmut, 4,142,753, Cl. 293-102.000.

Fisher, Leslie G.; and Sankey, Ivor G., to GKN Transmissions Limited. Splined joint. 4,142,807, Cl. 403-13.000.

Fivian, Daniel A., to Maag Gear-Wheel & Machine Company Limited. Generating method for grinding cylindrical gears. 4,142,333, Cl. 51-287.000.

Fix, Linda M.; and Lepiane, Gloria L. Adjustable toe ring. 4,142,382, Cl. 63-2.000.

Flammer, Wieland; Weber, Roland; Weiher, Gerhard; and Troner, Jakob, to Licentia Patent-Verwaltungs-G.m.b.H. Method for contacting contact areas located on semiconductor bodies. 4,142,288, Cl. 29-628.000.

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FMC Corporation: *See—*
Manring, William H.; DeBello, Patrick M.; and Imperato, Eugene G., 4,142,907, Cl. 106-52.000.
Mickelson, Roger D., 4,142,369, Cl. 60-425.000.
Peake, Clinton J.; Harnish, Wayne N.; and Davidson, Bruce L., 4,143,138, Cl. 424-246.000.
Williams, Michael R.; and McDonald, Dean T., 4,142,550, Cl. 137-538.000.

Focke, Heinz, to Focke & Pfuhl. Test apparatus for cigarette packing machines. 4,142,406, Cl. 73-819.000.

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Focke, Heinz, 4,142,406, Cl. 73-819.000.

Foden, Edward: *See—*
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Foell, Theodore J.; and Rees, Richard W. A., to American Home Products Corporation. Claudogenic-interceptive nonapeptides. 4,143,133, Cl. 424-177.000.

Fogle, Alva E., Jr.; Brennan, William E.; and Passino, Jacque, to K & M Plastics, Inc. Fold down multi-purpose vehicle seat back core or the like automotive structural member. 4,142,757, Cl. 296-63.000.

Foglia, Vincent F. P.: *See—*
Challine, Andre P. A.; Marchal, Alain M. E.; and Foglia, Vincent F. P., 4,142,819, Cl. 405-196.000.

Foglio, Maurizio; Franceschi, Giovanni; Masi, Paolo; and Suarato, Antonino, to Societa' Farmaceutici Italia S.p.A. Thiohydrazoazetidinones. 4,143,037, Cl. 260-239.00A.

Fogt, Thomas H., to General Motors Corporation. Ice maker flexible tray construction. 4,142,377, Cl. 62-135.000.

Fontaine, Georges; Regazzoni, Francis; Serville, Claude; and Vinel, Rene, to SKF Compagnie d'Applications Mechaniques. Resilient self-aligning clutch release bearing. 4,142,618, Cl. 192-98.000.

Fontanesi, Maurizio: *See—*
Ligorati, Ferdinando; Invernizzi, Renzo; Collu, Carlo; and Fontanesi, Maurizio, 4,142,990, Cl. 252-429.00C.

Foote, John P., to U.S. Armament Corporation. Recoil assembly for a firearm adapter. 4,142,314, Cl. 42-16.000.

Ford Motor Company: *See—*
Hayden, William L., 4,143,192, Cl. 428-31.000.

Forgey, James F., to Pomeroy, Seth. Dispensing apparatus for tampons. 4,142,649, Cl. 221-82.000.

Formax, Inc.: *See—*
Sandberg, Glenn A., 4,142,376, Cl. 62-158.000.

Forster, Franz; and Heyl, Walter, to Linde Aktiengesellschaft. Axial-piston machine with inclinable control surface. 4,142,452, Cl. 91-506.000.

Fortress Engineering Limited: *See—*
Hare, John G.; and Leaver, Ronald D., 4,142,510, Cl. 126-271.000.

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Fost, Dennis L.: *See—*
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Foster, Thomas G.: *See—*
Arnquist, Willard D.; Foster, Thomas G.; and Roalsvig, Melvin J., 4,142,699, Cl. 244-83.00K.

Fradenburgh, Evan A., to United Technologies Corporation. Mechanism for synchronously varying diameter of a plurality of rotors and for limiting the diameters thereof. 4,142,697, Cl. 244-7.00R.

Franceschi, Giovanni: *See—*
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Frank, Fritz, to Leybold-Heraeus GmbH & Co. KG. Power supply for electron beam guns. 4,143,272, Cl. 250-425.000.

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Fraser, Douglas S., to FTS, Systems, Inc. Freeze drying stoppering apparatus. 4,142,303, Cl. 34-92.000.

Fremont, Henry A., to Champion International Corporation. Process for enhancing recovery of tall oil soap from black liquor. 4,142,967, Cl. 210-23.00F.

Fremont, Joseph M., to Du Pont de Nemours, E. I., and Company. Butinediol using catalyst prepared from synthetic malachite. 4,143,231, Cl. 568-855.000.

Friedman, Maurice: *See—*
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Frink, John W.: *See—*
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Fritsch, Carl W., Jr.; and Wolfe, Robert W., to GTE Sylvania Incorporated. Method for producing low expansion ceramics. 4,142,879, Cl. 65-18.000.

FTS, Systems, Inc.: *See—*
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Fuji Photo Film Co., Ltd.: *See—*
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Ogata, Yasuhiro; and Ariyasu, Kenji, 4,142,404, Cl. 73-762.000.
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Fuji Polymer Industries, Co., Ltd.: *See—*
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Fujii, Yuichi; Suzuki, Yasuo; Yoshikawa, Rikizo; Seo, Kiyokazu; Mori, Katsunori; Kikuchi, Yasunobu; and Yoshida, Kazuo, to Tokai Rubber Industries Ltd.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Support devices for automobile engine. 4,142,701, Cl. 248-544.000.

Fujiki, Goro: *See—*
Iwahara, Makoto; Maruyama, Fumio; Fujiki, Goro; Mori, Toshinori; Hiyama, Norio; and Kikuchi, Mitsuru, 4,143,244, Cl. 179-1.00G.

Fujinawa, Masaaki; Goto, Tatsuo; and Harada, Mineo, to Hitachi, Ltd. Apparatus for positioning. 4,143,310, Cl. 318-571.000.

Fujioka, Kazuyoshi, to Nissan Motor Company, Limited. Hydraulic transmission control system. 4,142,614, Cl. 192-4.00A.

Fujioka, Yasuo: *See—*
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Fujisawa Pharmaceutical Co., Ltd.: *See—*
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Takaya, Takao; Masugi, Takashi; Takasugi, Hisashi; and Kochi, Hiromu, 4,143,166, Cl. 424-246.000.

Fujishiro, Takeshi: *See—*
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Fujishita, Toshio: *See—*
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Fujitsu Limited: *See—*
Kurita, Shoichi; Hiratsuka, Yoshitaka; and Shuto, Kazuya, 4,143,328, Cl. 328-155.000.

Funada, Mitsuaki; Hayatsu, Kazuo; and Noguchi, Takanobu, to Sumitomo Chemical Co., Ltd. Method for isolating low molecular weight polymer. 4,143,085, Cl. 260-677.00A.

Funk, Richard S.; Mogg, Donald W.; and Ruff, David L. Composition and process for selectively removing oleaginous products from water. 4,142,969, Cl. 210-36.000.

Fussi, Fernando; and Fedeli, Gianfranco. Polyanion fraction containing hexosamines. 4,143,132, Cl. 424-104.000.

G.D. Societa per Azioni: *See—*
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G S & H Equipment Corporation: *See—*
Griner, Henry J.; Griner, Wade; Hyars, Claude; and Sweat, Tommy, 4,142,350, Cl. 56-27.500.

Gadallah, Fahmi F.: *See—*
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Gaffar, Maria C., to Colgate Palmolive Company. Dental prophylactic paste. 4,143,126, Cl. 424-49.000.

Gaffard, Jean-Paul: *See—*
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Gaines, Robert W., to Construction Products Research, Inc. Method and composition for controlling contraction in setting cementitious systems through the addition of gas generating agents. 4,142,909, Cl. 106-87.000.

Gainsborough Hardware Industries Pty. Limited: *See—*
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Mallozzi, Philip J.; Epstein, Harold M.; Jung, Richard G.; Applebaum, David C.; Fairand, Barry P.; Gallagher, William J.; Uecker, Ronald L.; and Muckerheide, Myron C., 4,143,275, Cl. 250-503.000.

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Garcia, Nelson C. Endotracheal tube holder. 4,142,527, Cl. 128-348.000.
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Garrett, Walter L., to Dow Chemical Company, The. Composition suitable for use as desensitizing gumming solution for lithographic printing plates. 4,143,021, Cl. 260-29.60E.
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Gauthier, Francis; and Mignien, Georges, to Societe Anonyme Dite: Les Cables de Lyon. Device for connecting optical fibres together. 4,142,777, Cl. 350-96.210.
Gay, Robert W., to Rheem Manufacturing Company. Stuffing horn construction for sausage making machine. 4,142,273, Cl. 17-41.000.
Gaysert, Gerhard, to Eberspacher, J. Elastic mounting for a catalytic converter in an internal combustion engine. 4,143,117, Cl. 422-179.000.
Gebhart, Carlton E., to Joslyn Mfg. and Supply Co. Earth anchor. 4,142,336, Cl. 52-166.000.
Gehring, Joachim: *See—*
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Gencsoy, Hasan T.; and Gardner, John F., to United States of America, Energy. Wear compensating seal means for rotary piston coal feeder. 4,142,868, Cl. 48-86.00R.
General Atomic Company: *See—*
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General Dynamics Corporation: *See—*
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Culbertson, Richard, 4,142,660, Cl. 224-45.00P.
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Dunn, Bruce S., 4,142,946, Cl. 204-16.000.
Kelley, Fred W., Jr., 4,143,315, Cl. 323-24.000.
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Lee, Gim F., Jr., 4,143,095, Cl. 260-874.000.
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Fogt, Thomas H., 4,142,377, Cl. 62-135.000.
Johnson, Lawrence P.; and Vogel, William C., 4,142,648, Cl. 220-203.000.
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Negri, Joseph M.; and Wallace, Thomas F., 4,142,494, Cl. 123-119.00C.
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Route, William D.; Auman, John T.; and Rogers, Wesley A., 4,143,368, Cl. 340-543.000.
Walters, Leslie K., 4,142,647, Cl. 220-85.800.
Weibel, John, Jr.; Deaton, Homer W.; and Beard, Dale A., 4,142,373, Cl. 62-138.000.
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Bohmholdt, Gerd; Deininger, Gunter; Gerlach, Hans-Otto; Hahn, Winfried; and Huwels, Wilhelm, 4,142,875, Cl. 55-72.000.
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Gerspacher, Michel; and Cohen, Albert, to Goodyear Tire & Rubber Company, The. Process for making zinc coated steel wire and product made thereby. 4,143,209, Cl. 428-592.000.
Gesellschaft fur Kernforschung m.b.H.: *See—*
Wild, Eugen, 4,142,934, Cl. 176-78.000.
Gewerkschaft Eisenhutte Westfalia: *See—*
Steinkuhl, Bernd, 4,142,812, Cl. 403-292.000.
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Gibbs, Marylu B.; and Liu, Gordon, to Dow Chemical Company, The. Fluorination of methyl ketones. 4,143,078, Cl. 260-653.600.
Gibson, Ian E.; and Mansfield, Stephen T., to Marconi Company Limited, The. Television camera tube arrangements. 4,143,305, Cl. 315-379.000.
Gidewall, Kenneth L.; and Proce, James, to CVP Systems, Inc. Flexible container inserting apparatus. 4,142,453, Cl. 93-36.010.
Gierse, Franz-Josef, to Muller, Franz. Corduroy cutting machine. 4,142,277, Cl. 26-9.000.
Giessler, Willi, to Mifago AG. Hoist. 4,142,709, Cl. 254-168.000.
Gilbert, Bruce R.; and Hall, Jack P. Pneumatic game with fabric interengaging elements. 4,142,725, Cl. 273-123.00A.
Gilbert, William J.; and Klassen, Ronald W. Highway line detector. 4,143,264, Cl. 250-210.000.
Gilgore, Wayne M., to International Paper Company. Halftone printing method. 4,142,462, Cl. 101-38.00R.
Gill, William A., to Union Carbide Corporation. Chalk-resistant, medium to dark colored polyurethanes, polymer/polyol and polyisocyanate compositions for use in producing same and methods for making said polyurethanes. 4,143,002, Cl. 521-137.000.
Gimag Aktiengesellschaft: *See—*
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Giordano, Louis G. Snap-on end cap for gutters and process for applying same. 4,142,370, Cl. 405-119.000.
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Girard, Leland K.: *See—*
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GKN Sankey Limited: *See—*
Golding, Cyril G., 4,142,658, Cl. 222-400.700.
GKN Transmissions Limited: *See—*
Fisher, Leslie G.; and Sankey, Ivor G., 4,142,807, Cl. 403-13.000.
Glancy, Walter P. Run-around type energy recovery system. 4,142,575, Cl. 165-29.000.
Glenn, Robert G., to Electric Power Research Institute, Inc. Multiple-piece ceramic turbine blade. 4,142,836, Cl. 416-193.00A.
Gloxhuber, Christian: *See—*
Osberghaus, Rainer; Lorenz, Peter; Gloxhuber, Christian; and Braig, Siegfried, 4,143,160, Cl. 424-365.000.
Gobke, Otto: *See—*
Steinecke, Rudolf; Gobke, Otto; and Gern, Klaus, 4,142,488, Cl. 123-99.000.
Goble, Arthur R.; and Webb, Michael H. J., to Plessey Handel und Investments AG. Spark ignition circuits. 4,143,303, Cl. 315-239.000.
Godard, Bruno; and Gaffard, Jean-Paul, to Compagnie Generale d'Electricite S.A. Gas laser device. 4,143,338, Cl. 331-94.50C.
Goettsche, Reimer: *See—*
Pommer, Ernst-Heinrich; Reuther, Wolfgang; Raff, Paul; and Goettsche, Reimer, 4,143,153, Cl. 424-289.000.
Gold, Richard F.: *See—*
Arzoumanidis, Gregory G.; Gold, Richard F.; and Michel, Christian G., 4,142,991, Cl. 252-429.00B.
Golding, Cyril G., to GKN Sankey Limited. Closure unit for beer kegs. 4,142,658, Cl. 222-400.700.
Golitz, Hans D., deceased: *See—*
Wagner, Kuno; Oertel, Gunter; Golitz, Hans D., deceased; and Quiring, Bernd, 4,143,060, Cl. 260-448.20N.
Golitz, Ingrid I. K., heiress: *See—*
Wagner, Kuno; Oertel, Gunter; Golitz, Hans D., deceased; and Quiring, Bernd, 4,143,060, Cl. 260-448.20N.
Gomez, I. Luis; and Foden, Edward, to Monsanto Company. Method of injection molding nitrile articles. 4,143,108, Cl. 264-102.000.
Goodale, John W.: *See—*
Butler, John P.; Rolston, John H.; den Hartog, James; Molson, Fred W. R.; and Goodale, John W., 4,143,123, Cl. 423-580.000.
Goodall, Charles C. O., to Ciba-Geigy AG. Method and apparatus for drying photographic material. 4,142,301, Cl. 34-18.000.
Goodman, Philip: *See—*
Kovac, Michael G.; Chleck, David J.; and Goodman, Philip, 4,143,177, Cl. 427-79.000.
Goodwin, Donald W.: *See—*
Doughty, Ralph O.; and Goodwin, Donald W., 4,142,511, Cl. 126-271.000.
Goodyear Tire & Rubber Company, The: *See—*
Cottman, Kirkwood S., 4,143,076, Cl. 260-609.00F.

Curtiss, Walter W., Jr., 4,142,930, Cl. 156-123.00R.
Gerspacher, Michel; and Cohen, Albert, 4,143,209, Cl. 428-592.000.
Harders, Hans-Dieter; and Helger, Roland, 4,143,080, Cl. 23-230.00B.
Kleijwegt, Jacob, 4,142,568, Cl. 152-354.00R.
Tazuma, James J.; and Bergomi, Angelo, 4,143,045, Cl. 260-306.500.

Goossens, Alfred E.: *See—*
Mookherjee, Braja D.; Withycombe, Donald A.; Katz, Ira; Goossens, Alfred E.; Vock, Manfred H.; Evers, William J.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,143,173, Cl. 426-535.000.

Goralski, Christian T.; and Burk, George A., to Dow Chemical Company, The. 3,5-Bis(chloromethylthio)-4-cyanoisothiazole. 4,143,043, Cl. 260-302.00S.

Goretta, Louis A.; and Otremba, Robert R., to Nalco Chemical Company. Method of controlling the molecular weight of vinyl carboxylic acid-acrylamide copolymers. 4,143,222, Cl. 526-64.000.

Gosling, Claus: *See—*
Simm, Walter; Gosling, Claus; Bonart, Richard; and von Falkai, Bela, 4,143,196, Cl. 428-212.000.

Gossen GmbH: *See—*
Krappatsch, Herbert, 4,143,265, Cl. 250-213.00R.

Goto, Syunsuke: *See—*
Sato, Hideshi; Otsubo, Takashi; Goto, Syunsuke; Amano, Minoru; and Seriu, Naoyuki, 4,142,399, Cl. 73-19.000.

Goto, Tatsuo: *See—*
Fujinawa, Masaaki; Goto, Tatsuo; and Harada, Mineo, 4,143,310, Cl. 318-571.000.

Grabbe, Dimitry G., to AMP Incorporated. Electrical devices such as watches and method of construction thereof. 4,142,287, Cl. 29-628.000.

Gradowski, Stephen: *See—*
Hyner, Jacob; and Gradowski, Stephen, 4,143,210, Cl. 428-646.000.

Graf, Fredy E.; and Krystek, Michael S., to General Atomic Company. Battery backup system. 4,143,283, Cl. 307-66.000.

Graham, Robert, to Newalls Insulation Co. Ltd. Manufacture of insulating products. 4,142,933, Cl. 162-396.000.

Granges Nyby AB: *See—*
Aslund, Christer, 4,143,208, Cl. 428-558.000.

Granzow, Robert H.: *See—*
Baver, Donald W.; Granzow, Robert H.; Horst, William R.; and Paganini, Bruno J., 4,143,357, Cl. 340-146.3SY.

Grasselli, Robert K.: *See—*
Bartek, Joseph P.; and Grasselli, Robert K., 4,143,082, Cl. 260-668.00F.

Great Lakes Carbon Corporation: *See—*
Joo', Louis A.; and Miller, Frederick C., 4,143,217, Cl. 429-218.000.

Greczin, John. Multi-wrap hose reinforcement. 4,142,352, Cl. 57-15.000.

Greenbaum, George. Channel culture array. 4,142,325, Cl. 47-79.000.

Greene, Andrew E.; and Crabbe, Pierre, to CHON Corporation. Manufacture of 2-(alkyl, alkenyl or alkynyl) 3-carbalkoxyalkyl ketones from alpha, beta-unsaturated ketones. 4,143,230, Cl. 562-504.000.

Greer, Edward M.; and Spezzano, Frank J. Fishing rod holder and bite indicator. 4,142,316, Cl. 43-17.000.

Grefco, Inc.: *See—*
Nielsen, Richard B.; and Vogelsang, Charles J., 4,142,968, Cl. 210-32.000.

Gretag Aktiengesellschaft: *See—*
Ehrat, Kurt; Mast, Fred; Huber, Ernst; and Huber, Josef, 4,143,279, Cl. 250-556.000.

Greth, Erich, to Lonza, Ltd. Process for the production of chloroacetyl chloride. 4,143,067, Cl. 260-544.00Y.

Greubel, Waldemar: *See—*
Baur, Guenter; and Greubel, Waldemar, 4,142,781, Cl. 350-345.000.

Grevich, John D. Pressure sensitive control of input pressure to transmission vacuum modulator. 4,142,427, Cl. 74-863.000.

Griffith, Thomas; and Campbell, Richard, to Boeing Company, The. Track mechanism assembly for a light rail vehicle. 4,142,327, Cl. 49-215.000.

Grimm, Eberhard: *See—*
Husges, Gerd; and Grimm, Eberhard, 4,142,356, Cl. 57-301.000.

Griner, Henry J.; Griner, Wade; Hyars, Claude; and Sweat, Tommy, to G S & H Equipment Corporation. Tobacco combine stalk guides. 4,142,350, Cl. 56-27.500.

Griner, Wade: *See—*
Griner, Henry J.; Griner, Wade; Hyars, Claude; and Sweat, Tommy, 4,142,350, Cl. 56-27.500.

Gronert, Gunter: *See—*
Laufhutte, Dieter; and Gronert, Gunter, 4,143,122, Cl. 423-574.00R.

Gropper, Lee: *See—*
Ishimaru, Kenzo; and Gropper, Lee, 4,142,670, Cl. 233-20.00R.

Groselak, Robert E.; and Podgor, Albert L. Self-locking baggage tag. 4,142,310, Cl. 40-21.00R.

Gross, Franz, to Siemens Aktiengesellschaft. Delay line for traveling wave tubes, in particular to the amplification of mm waves. 4,143,341, Cl. 333-157.000.

Gross, Ulrich, to U.S. Philips Corporation. Automatic bass chord system. 4,142,433, Cl. 84-1.030.

Gross, Ulrich, to U.S. Philips Corporation. Circuit arrangement for electronic musical instruments. 4,142,434, Cl. 84-1.010.

Groupement pour les Activites Atomiques et Avancees: *See—*
Daviot, Jean; and Marchais, Michel, 4,142,908, Cl. 106-64.000.

Gruber, Robert P., to United States of America, National Aeronautics and Space Administration. Closed loop solar array-ion thruster system with power control circuitry. 4,143,314, Cl. 323-15.000.

Gruen, Dieter M.; Mendelsohn, Marshall H.; and Dwight, Austin E., to United States of America, Energy. Lanthanum nickel aluminum alloy. 4,142,300, Cl. 34-15.000.

Gruppo Lepetit S.p.A.: *See—*
Occelli, Emilio, 4,143,055, Cl. 260-346.730.

GSPK (Electronics) Limited: *See—*
MacJannette, Barrie, 4,142,331, Cl. 51-102.000.

GTE Automatic Electric Laboratories, Inc.: *See—*
Dotter, Berton E., Jr., 4,143,363, Cl. 340-347.0AD.

GTE Sylvania Incorporated: *See—*
Fritsch, Carl W., Jr.; and Wolfe, Robert W., 4,142,879, Cl. 65-18.000.

Guillermin, Rene: *See—*
Bardon, Pierre; Guillermin, Rene; and Joly, Jean, 4,143,199, Cl. 428-369.000.

Guisnet, Michel: *See—*
Barrault, Joel; Guisnet, Michel; Lucien, Jacques; and Maurel, Raymond, 4,143,052, Cl. 260-329.00R.

Guisti, George R.: *See—*
Guisti, Vito, 4,142,367, Cl. 60-325.000.

Guisti, Karlino: *See—*
Guisti, Vito, 4,142,367, Cl. 60-325.000.

Guisti, Richard P.: *See—*
Guisti, Vito, 4,142,367, Cl. 60-325.000.

Guisti, Robert E.: *See—*
Guisti, Vito, 4,142,367, Cl. 60-325.000.

Guisti, Vito, to Dondero, Eleanor A. Guisti; Guisti, Robert E.; Guisti, George R.; Guisti, Richard P.; and Guisti, Karlino, part interest to each. Domestic water pressure-flow powered generator system. 4,142,367, Cl. 60-325.000.

Gupta, Pramod: *See—*
Hetzel, Hartmut; Gupta, Pramod; and Sandhagen, Hans-Joachim, 4,143,072, Cl. 260-573.000.

Gutierrez, Antonio: *See—*
Brois, Stanley J.; Gutierrez, Antonio; and Feldman, Nicholas, 4,142,866, Cl. 44-63.000.

Guyot, Charles; and Muller, Jacques, to Ebauches Tavannes S.A. Calendar watch movement with date-indicating member. 4,142,363, Cl. 58-58.000.

H & H Research, Inc.: *See—*
Hill, Edward J., 4,142,522, Cl. 128-133.000.

H. J. Heinz Company: *See—*
Capo, James L.; and Daher, James, 4,142,635, Cl. 206-622.000.

Haas, Peter; Blahak, Johannes; Meiners, Hans-Joachim; and Mormann, Werner, to Bayer Aktiengesellschaft. Polyurethanes made with linear polyamines. 4,143,003, Cl. 521-129.000.

Haas, Rene: *See—*
Le Fur, Jean; and Haas, Rene, 4,142,971, Cl. 210-77.000.

Habu, Teiji; Sasaki, Takashi; Tamura, Masahide; Korematsu, Shinobu; Wada, Tsuneo; Ishii, Hiroki; and Omura, Takayoshi, to Konishiroku Photo Industry Co., Ltd. Gelatino silver halide photographic material hardened with a reaction product of a vinylsulfonyl compound and a water soluble compound. 4,142,897, Cl. 96-67.000.

Haefner, Fred F. Speed ratio change mechanism. 4,142,422, Cl. 74-393.000.

Hagel, Paul: *See—*
Raab, Karlheinz; Wolff, Konrad; Koch, Heinrich; and Hagel, Paul, 4,143,001, Cl. 260-2.300.

Hahn, Heinrich: *See—*
Heumann, Hans; Hahn, Heinrich; Hilt, Walter; Liebing, Heinz; and Schweppe, Manfred, 4,142,885, Cl. 71-28.000.

Hahn, Terrance; and Maxam, Allan M. Slab gel mold and electrophoresis apparatus. 4,142,960, Cl. 204-299.00R.

Hahn, Winfried: *See—*
Bohmholdt, Gerd; Deininger, Gunter; Gerlach, Hans-Otto; Hahn, Winfried; and Huwels, Wilhelm, 4,142,875, Cl. 55-72.000.

Haines, Robert C.: *See—*
Shaw, Michael; and Haines, Robert C., 4,142,727, Cl. 273-232.000.

Hall, Denis G.: *See—*
Cain, William D.; Hall, Denis G.; and Middleton, John D., 4,143,342, Cl. 333-33.000.

Hall, Jack P.: *See—*
Gilbert, Bruce R.; and Hall, Jack P., 4,142,725, Cl. 273-123.00A.

Hall, John B.; Wiegers, Wilhelmus J.; Hill, Ira D.; Novak, Robert M.; and Schmitt, Frederick L., to International Flavors & Fragrances Inc. Uses of alpha methyl styrene dimers in perfumery processes and products. 4,142,998, Cl. 252-522.000.

Hall, John B.: *See—*
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,143,074, Cl. 260-586.00G.

Hall, Michael J.: *See—*
Atherton, Frank R.; Hall, Michael J.; Hassall, Cedric H.; Lambert, Robert W.; and Ringrose, Peter S., 4,143,134, Cl. 424-177.000.

Hamashima, Yoshio: *See—*
Narisada, Masayuki; Onoue, Hiroshi; Tsuji, Teruji; Nishitani, Yasuhiro; Yoshioka, Mitsuru; Hamashima, Yoshio; and Nagata, Wataru, 4,143,038, Cl. 260-239.00A.

Hamill, Robert L.: *See—*
Ensminger, Paul W.; and Hamill, Robert L., 4,143,141, Cl. 424-253.000.

Hamilton, William H. Flush toilet system. 4,142,262, Cl. 4-354.000.

Hamisch, Paul H., Jr., to Monarch Marking Systems, Inc. Hand-held labeler. 4,142,932, Cl. 156-384.000.

Hammar, Walton J.; and Rustad, Mark A., to Riker Laboratories, Inc.

Anti-microbial (2-nitro-3-phenyl benzofuranyl)-phenylalkanoic acids and derivatives. 4,143,152, Cl. 424-285.000.

Hammar, Walton J.: *See*—
Scherrer, Robert A.; Hammar, Walton J.; and Stern, Richard M., 4,143,154, Cl. 424-285.000.

Hammond, James T., to Caterpillar Tractor Co. Fuel injection pump timing mechanism. 4,142,498, Cl. 123-139.0AP.

Hamrick, Gene H., to Hamrick Manufacturing & Service, Inc. Bottle case unloader. 4,142,643, Cl. 414-416.000.

Hamrick Manufacturing & Service, Inc.: *See*—
Hamrick, Gene H., 4,142,643, Cl. 414-416.000.

Handa, Rikiya. Apparatus for preventing gas leakage. 4,142,851, Cl. 431-16.000.

Hann, Paul D.: *See*—
Carle, Robert A.; and Hann, Paul D., 4,143,086, Cl. 260-683.0PD.

Hansen, Russel W.; and Stellrecht, Hans H. Motor speed control circuit apparatus. 4,143,307, Cl. 318-16.000.

Harada, Mineo: *See*—
Fujinawa, Masaaki; Goto, Tatsuo; and Harada, Mineo, 4,143,310, Cl. 318-571.000.

Harada, Nozomu; and Kubota, Nobuhisa, to Tokyo Shibaura Electric Co., Ltd. Manufacturing method of semiconductor devices. 4,143,178, Cl. 427-85.000.

Harders, Hans-Dieter; and Helger, Roland, to Goodyear Tire & Rubber Company, The. Method and reagent for the assay of hydroperoxide. 4,143,080, Cl. 23-230.00B.

Hardt, Dietrich: *See*—
Hentschel, Claus; von Bonin, Wulf; Gehring, Joachim; and Hardt, Dietrich, 4,143,105, Cl. 264-51.000.

Hardy, Edgar E.: *See*—
Johnson, Gregory R.; Miles, Malcolm G.; Salyer, Ival O.; and Hardy, Edgar E., 4,143,234, Cl. 136-89.0PC.
Kapany, Narinder S.; Hardy, Edgar E.; and Orofino, Thomas A., 4,143,233, Cl. 136-89.0PC.

Hare, John G.; and Leaver, Ronald D., to Fortress Engineering Limited. Solar heater. 4,142,510, Cl. 126-271.000.

Harnish, Wayne N.: *See*—
Peake, Clinton J.; Harnish, Wayne N.; and Davidson, Bruce L., 4,143,138, Cl. 424-246.000.

Harrington Manufacturing Company: *See*—
Jordan, Bertram L.; and Mitchell, John D., 4,142,348, Cl. 56-10.200.

Harrison, Roger G., to Lilly Industries Limited. 2-Sulfinyl and 2-sulfonyl oxazoles. 4,143,047, Cl. 260-307.00R.

Hart, George A.: *See*—
Searles, Stuart K.; and Hart, George A., 4,143,336, Cl. 331-94.50G.

Hartitz, Joachim E., to B. F. Goodrich Company, The. Smoke retardant vinyl chloride and vinylidene chloride polymer compositions. 4,143,030, Cl. 260-45.75B.

Hartle, Robert T.: *See*—
Roy, Prodyot; Sandusky, David W.; and Hartle, Robert T., 4,143,316, Cl. 324-33.000.

Harvey, Philip C. Wide range digital meter. 4,143,318, Cl. 324-111.000.

Harwood, Leopold A.; and Wittmann, Erwin J., to RCA Corporation. Automatic brightness control circuit employing a closed control loop stabilized against disruption by large amplitude video signals. 4,143,398, Cl. 358-34.000.

Harwood, Peter G.: *See*—
Brewer, John H.; and Harwood, Peter G., 4,142,584, Cl. 166-359.000.

Hasegawa, Gary K.: *See*—
Mascia, Carmen T.; and Hasegawa, Gary K., 4,142,653, Cl. 222-207.000.

Hashimoto, Nobuyuki: *See*—
Sakakibara, Naoji; Hashimoto, Nobuyuki; and Shibata, Norio, 4,142,553, Cl. 137-625.440.

Hassall, Cedric H.: *See*—
Atherton, Frank R.; Hall, Michael J.; Hassall, Cedric H.; Lambert, Robert W.; and Ringrose, Peter S., 4,143,134, Cl. 424-177.000.

Hata, Kunihiro: *See*—
Shikitami, Yasuo; Iida, Kosuke; Hata, Kunihiro; and Kasajima, Fumio, 4,142,956, Cl. 204-159.140.

Hattori, Kyo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Bimetal valve. 4,142,676, Cl. 236-87.000.

Hatz, Ernst; Eibl, Heinz; and Absenger, Erich, to Motorenfabrik Hatz GmbH & Co. KG. Signal indicating device on internal combustion engines. 4,142,503, Cl. 123-198.00D.

Hayashi, Yoshimasa, to Nissan Motor Company, Limited. Internal combustion engine having improved cylinder head configuration. 4,142,501, Cl. 123-193.00H.

Hayatsu, Kazuo: *See*—
Funada, Mitsuaki; Hayatsu, Kazuo; and Noguchi, Takanobu, 4,143,085, Cl. 260-677.00A.

Hayden, William L., to Ford Motor Company. Tape strip. 4,143,192, Cl. 428-31.000.

Hayes, Thomas H.; and LoMaglio, Lewis C., to Ethyl Corporation. Collapsible dispensing tube. 4,142,630, Cl. 206-277.000.

Hazeltine Corporation: *See*—
Wheeler, Harold A., 4,143,379, Cl. 343-854.000.

Heald, Harold W.; and Norcott, John W., to Boral Cyclone Limited. Latch mechanisms for pool gates. 4,142,749, Cl. 292-189.000.

Hechler, Valentine, IV. Multi-stage solution proportioner dispenser. 4,142,681, Cl. 239-318.000.

Heckman, Paul J., Jr.; and McCardell, Peter D., to United States of America, Navy. Real-time optical mapping system. 4,143,400, Cl. 358-95.000.

Hector, Roger D.: *See*—
Romano, John V.; and Hector, Roger D., 4,142,722, Cl. 273-101.100.

Hefferan, Gerald T.: *See*—
Burke, Aaron R.; Hough, William V.; and Hefferan, Gerald T., 4,142,902, Cl. 106-1.230.

Heide, Henry A.: *See*—
Diver, James J.; Heide, Henry A.; and Masse, Basil J., 4,142,624, Cl. 198-425.000.

Heil Co., The: *See*—
Potwin, David R., 4,142,687, Cl. 241-194.000.

Heimberg, Eli, to Cameo Curtains, Inc. Window curtain having weight-receiving pockets. 4,142,570, Cl. 160-349.00R.

Heimberger, Helmut, to Optilon W. Erich Heilmann GmbH. Warp-knit slide-fastener stringer half and method of making same. 4,142,276, Cl. 24-205.16C.

Heimel, Othmar, to "Wefoba" Werkzeug-und Formenbau Gesellschaft m.b.H. Co. KG. Counterblowing machine hammer. 4,142,397, Cl. 72-407.000.

Heinze, Richard: *See*—
Busse, Peter, 4,142,271, Cl. 16-129.000.

Heitmann, Jurgen, to Robert Bosch GmbH. Signal delay system. 4,143,326, Cl. 328-55.000.

Helger, Roland: *See*—
Harders, Hans-Dieter; and Helger, Roland, 4,143,080, Cl. 23-230.00B.

Heilkuhl, Ludger; and Maier, Martin, to Maschinenfabrik Fahr Aktiengesellschaft Gottmadingen. Disk type mower. 4,142,349, Cl. 56-14.400.

Hemsath, Klaus H.; and Vereecke, Frank J., to Midland-Ross Corporation. Method and apparatus for effecting uniform heat transfer in an industrial furnace. 4,142,712, Cl. 266-44.000.

Henkel Kommanditgesellschaft auf Aktien: *See*—
Bloching, Helmut; Krings, Peter; and Pfeiffer, Hans, 4,142,999, Cl. 252-544.000.
Moller, Hinrich; and Osberghaus, Rainer, 4,143,159, Cl. 424-358.000.
Osberghaus, Rainer; Lorenz, Peter; Gloxhuber, Christian; and Braig, Siegfried, 4,143,160, Cl. 424-365.000.

Henney, John W.; and Wilks, Ronald S., to United Kingdom Atomic Energy Authority. Porous bodies. 4,143,182, Cl. 427-226.000.

Henning, Bodo; Otto, Heinz; and Kruger, Helmut, to Volkswagenwerk Aktiengesellschaft. Arrangement for closing the inlet pipe of a container. 4,142,756, Cl. 296-1.00C.

Henry Valve Company: *See*—
Krause, Richard J.; and Zaletel, Joseph, 4,142,543, Cl. 137-15.000.

Hensch, Edward J., to Stauffer Chemical Company. Flame retarded polyurethane foams having reduced discoloration. 4,143,219, Cl. 521-107.000.

Hentschel, Claus; von Bonin, Wulf; Gehring, Joachim; and Hardt, Dietrich, to Bayer Aktiengesellschaft. Rod for supporting plants and process for its manufacture. 4,143,105, Cl. 264-51.000.

Herbert, Frank P.; and Ottenheimer, John. Panemone windmill. 4,142,822, Cl. 415-2.000.

Herbold, Ted E. Tiltable reclining and seating device. 4,142,520, Cl. 128-74.000.

Heremans, Joseph F.: *See*—
Masson, Pierre L.; and Heremans, Joseph F., 4,143,124, Cl. 424-12.000.

Hermann, Wilhelm; Horster, Horst; Schroder, Johann; and Mahdjuri, Faramarz, to U.S. Philips Corporation. Solar collector comprising an evacuated cover. 4,142,509, Cl. 126-270.000.

Hermans, Johny C., to S.A. Texaco Belgium N.V. Lubricating compositions containing bispiperazido phosphorus and trispiperazido phosphorus compounds. 4,142,979, Cl. 252-46.700.

Herrmann, Karl H. F. W., to Nova-Tech Engineering, Inc. Welding wire feed mechanism. 4,143,257, Cl. 219-60.00A.

Herscovitz, Jack. Device for detecting fluid flow. 4,143,255, Cl. 200-81.90M.

Hertzberg, Martin: *See*—
Cashdollar, Kenneth L.; Hertzberg, Martin; and Litton, Charles D., 4,142,417, Cl. 73-355.00R.

Hess, Hans-Jurgen E.; Johnson, Michael R.; Bindra, Jasjit S.; and Schaaf, Thomas K., to Pfizer Inc. 15-Substituted-ω-pentanorprostaglandins. 4,143,051, Cl. 260-332.20A.

Hesston Corporation: *See*—
White, Allen A., 4,142,746, Cl. 289-2.000.

Hetzel, Hartmut; Gupta, Pramod; and Sandhagen, Hans-Joachim, to Bayer Aktiengesellschaft. Process for the purification of polyethers using a tubular coil evaporator. 4,143,072, Cl. 260-573.000.

Heumann, Hans; Hahn, Heinrich; Hilt, Walter; Liebing, Heinz; and Schweppe, Manfred, to Veba-Chemie Aktiengesellschaft. Method of preparing fertilizers with retarded nutrient release. 4,142,885, Cl. 71-28.000.

Heyl, Walter: *See*—
Forster, Franz; and Heyl, Walter, 4,142,452, Cl. 91-506.000.

Heymer, Gero: *See*—
Stenzel, Jurgen; Heymer, Gero; and May, Christian, 4,143,121, Cl. 423-299.000.

Heyrana, Pablo M. Waterproof multiple electrical switch assembly. 4,143,254, Cl. 200-16.00R.

Hibino, Masaru; and Morishita, Michio, to Toyota Jidosha Kogyo Kabushiki Kaisha. Exhaust gas recirculation apparatus for an internal combustion engine. 4,142,491, Cl. 123-119.00A.

Hicks, Leon E.; Peterson, Wayne A.; and Schexnayder, Lawrence F.,

to Caterpillar Tractor Co. Dual source hydraulic steering system. 4,142,842, Cl. 417-288.000.

Higgins, Raymond: *See—*
Bamforth, John R.; and Higgins, Raymond, 4,143,087, Cl. 260-683.15R.

Hildebrant, Uwe; Nicoll, Andrew R.; and Sahm, Peter R., to BBC Brown, Boveri & Company, Limited. High temperature alloy. 4,142,921, Cl. 148-32.000.

Hill, Edward J., to H & H Research, Inc. Pediatric arm restraint and method of using same. 4,142,522, Cl. 128-133.000.

Hill, Ira D.: *See—*
Hall, John B.; Wiegers, Wilhelmus J.; Hill, Ira D.; Novak, Robert M.; and Schmitt, Frederick L., 4,142,998, Cl. 252-522.000.

Hilt, Walter: *See—*
Heumann, Hans; Hahn, Heinrich; Hilt, Walter; Liebing, Heinz; and Schweppe, Manfred, 4,142,885, Cl. 71-28.000.

Himmelstein, Sydney, to S. Himmelstein and Company. Torque-yield control system. 4,142,591, Cl. 173-12.000.

Hirai, Kentaro; Fujishita, Toshio; Ishiba, Teruyuki; and Sugimoto, Hirohiko, to Shionogi & Co., Ltd. Process for producing triazolylbenzophenone derivatives. 4,143,048, Cl. 260-308.00R.

Hirao, Takashi: *See—*
Esaki, Hideya; Hirao, Takashi; and Kawakami, Hakuhei, 4,143,388, Cl. 357-23.000.

Hiratsuka, Yoshitaka: *See—*
Kurita, Shoichi; Hiratsuka, Yoshitaka; and Shuto, Kazuya, 4,143,328, Cl. 328-155.000.

Hirschman, Shalom Z. Methods of making feminine hygienic pads. 4,142,476, Cl. 112-262.000.

Hisada, Naoji, to Chuetsu Waukesha Kabushiki Kaisha. Pitch controlling device of a marine propeller. 4,142,835, Cl. 416-162.000.

Hisazumi, Nobuyuki; and Uehara, Tsutomu, to Kureha Kagaku Kogyo Kabushiki Kaisha. Vinylidene chloride copolymer composition. 4,143,011, Cl. 260-23.0EP.

Hitachi Cable Ltd.: *See—*
Obinata, Tatsuichi; Wada, Kaname; Ogibayashi, Shigeaki; and Mihara, Hironobu, 4,143,211, Cl. 428-650.000.

Hitachi Denshi Kabushiki Kaisha: *See—*
Nagahara, Shusaku; Takahashi, Kenji; and Nonaka, Mamoru, 4,143,399, Cl. 358-44.000.

Hitachi, Ltd.: *See—*
Abe, Yuuhei; Mohri, Katsuo; Azuma, Nobuo; Kuwahara, Kazuyoski; Yabe, Yuhiko; and Tominaga, Yasunori, 4,142,375, Cl. 62-158.000.
Fujinawa, Masaaki; Goto, Tatsuo; and Harada, Mineo, 4,143,310, Cl. 318-571.000.
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Hosoki, Shigeyuki; and Okano, Hiroshi, 4,143,292, Cl. 313-336.000.
Koike, Norio; and Kubo, Masaharu, 4,143,389, Cl. 357-31.000.
Kuroiwa, Hiroshi; Ohyama, Yoshishige; Nishimura, Yutaka; and Miyakawa, Nobuaki, 4,142,407, Cl. 73-118.000.
Miyoshi, Tadahiko; and Kurihara, Yasutoshi, 4,143,385, Cl. 357-19.000.
Mizukami, Satoshi; Shoyama, Etsuhiko; Matsunobu, Kenji; Taniguchi, Masatosi; Konno, Kuniyoshi; and Kimura, Katunori, 4,143,290, Cl. 310-270.000.
Nagahara, Shusaku; Takahashi, Kenji; and Nonaka, Mamoru, 4,143,399, Cl. 358-44.000.
Ochiai, Izumi; Miyagi, Masahiro; and Wakabayashi, Yoichi, 4,142,392, Cl. 72-113.000.
Oguro, Tomokatsu, 4,143,295, Cl. 313-346.00R.
Yoshitomi, Yuji; Tamura, Zensuke; Kamohara, Hideaki; Omura, Keiji; Murakami, Yoshimasa; Takata, Tadasi; and Nuwa, Teruo, 4,142,581, Cl. 165-173.000.

Hitchcock, William H.; Cornell, Archie R.; and Engel, Joseph C., to Westinghouse Electric Corp. Positive starting and operating apparatus for high-pressure sodium lamps. 4,143,304, Cl. 315-276.000.

Hiyama, Norio: *See—*
Iwahara, Makoto; Maruyama, Fumio; Fujiki, Goro; Mori, Toshinori; Hiyama, Norio; and Kikuchi, Mitsuru, 4,143,244, Cl. 179-1.00G.

Hobart Corporation: *See—*
Shih, Kelvin; and Bishai, Makram N., 4,142,539, Cl. 134-113.000.

Hodge, Gordon W.; and Nye, Ted D., to Sperry Rand Corporation. Control device and method for reading a data character from a computer at a fast rate and transmitting the character at a slow rate on a communication line. 4,143,418, Cl. 364-200.000.

Hoechst Aktiengesellschaft: *See—*
Fischer, Edgar; Brandrup, Johannes; and Weinlich, Jurgen, 4,143,097, Cl. 260-884.000.
Klippert, Heinz; Mielke, Ingolf; and Plewan, Otto, 4,143,224, Cl. 526-200.000.
Schwandt, Rudi; and Topfer, Dieter, 4,142,480, Cl. 118-661.000.
Stenzel, Jurgen; Heymer, Gero; and May, Christian, 4,143,121, Cl. 423-299.000.

Hoffman, Gary J. Fishing rod holder and hook setting device. 4,142,315, Cl. 43-15.000.

Hoffmann-La Roche Inc.: *See—*
Atherton, Frank R.; Hall, Michael J.; Hassall, Cedric H.; Lambert, Robert W.; and Ringrose, Peter S., 4,143,134, Cl. 424-177.000.
Konikoff, John J., 4,142,521, Cl. 128-82.100.
Rosen, Perry, 4,143,227, Cl. 544-325.000.

Hoffmann, Werner; and Von Fraunberg, Karl, to BASF Aktiengesellschaft. Polycyclic scents. 4,143,065, Cl. 260-464.000.

Hoffmann, Werner: *See—*
Rossy, Phillip A.; Hoffmann, Werner; and Mueller, Norbert, 4,143,050, Cl. 260-332.20C.

Hoge, Robert R., to Bendix Corporation, The. Air temperature sensor connection assembly. 4,143,348, Cl. 338-28.000.

Holbrook, Walter R.; and Koszi, Louis A., to Bell Telephone Laboratories, Incorporated. Method of bonding microelectronic chips. 4,142,662, Cl. 228-110.000.

Holcomb, Ben W. Hydrotherapy spa and method of fabricating same. 4,142,337, Cl. 52-169.700.

Holiman, William E.: *See—*
Johnson, Albert O.; Holiman, William E.; and Buchanan, Stephen D., 4,142,688, Cl. 241-236.000.

Holl, Gordon D.: *See—*
Marcolina, Gene A.; and Holl, Gordon D., 4,142,320, Cl. 43-61.000.

Holland Mechanics B.V.: *See—*
Damman, Cornelis C., 4,142,394, Cl. 72-220.000.

Hollandse Signaalapparaten B.V.: *See—*
Tammes, Jan B.; and Toebes, Marinus, 4,143,361, Cl. 340-347.0CC.

Holmes, David D., to RCA Corporation. Comb filter apparatus. 4,143,397, Cl. 358-31.000.

Holstead, Colin; Kilminster, Kenneth N.; and Simons, Michael J., to Eastman Kodak Company. Photographic materials comprising azo sensitizing dyes. 4,142,901, Cl. 96-139.000.

Homburg, Axel: *See—*
Stahlmann, Rudolf; Brede, Uwe; and Homburg, Axel, 4,142,467, Cl. 102-93.000.

Honel, Hans; Keller, Karlfried; Michel, Walter; and Schon, Manfred, to Cassella Aktiengesellschaft. Preparation of melamine derivatives. 4,143,016, Cl. 260-29.40R.

Honeywell Inc.: *See—*
Ichida, Shunji, 4,143,347, Cl. 338-28.000.
Shavit, Gideon, 4,142,574, Cl. 165-16.000.

Honig, Milton L.: *See—*
Walsh, Edward N.; and Honig, Milton L., 4,142,904, Cl. 260-45.85T.

Honjo, Takeshige, to Murata Kikai Kabushiki Kaisha. Yarn ending unit for open-end spinning machine. 4,142,358, Cl. 57-263.000.

Hoogovens Ijmuiden, B.V.: *See—*
van Konijnenburg, Jan T.; and Butter, Johannes A. M., 4,143,104, Cl. 264-30.000.

Hook, John L., to Gainsborough Hardware Industries Pty. Limited. Door furniture. 4,142,748, Cl. 292-169.150.

Hori, Kiyotaka; Mikami, Takeshi; Miyazako, Takushi; and Naito, Kenji, to Fuji Photo Film Co., Ltd. Method for forming images. 4,142,894, Cl. 96-63.000.

Horiki, Akira, to Hitachi, Ltd. Analog-digital code converter in a digital telephone switching system. 4,143,242, Cl. 179-15.0BW.

Horst, William R.: *See—*
Baver, Donald W.; Granzow, Robert H.; Horst, William R.; and Paganini, Bruno J., 4,143,357, Cl. 340-146.3SY.

Horster, Horst: *See—*
Hermann, Wilhelm; Horster, Horst; Schroder, Johann; and Mahdjuri, Faramarz, 4,142,509, Cl. 126-270.000.

Hosaka, Akio; and Aono, Shigeo, to Nissan Motor Company, Ltd. Hybrid spark advance control apparatus for internal combustion engines. 4,142,490, Cl. 123-117.00R.

Hosaka, Akio: *See—*
Asano, Masaharu; Fujishiro, Takeshi; Aono, Shigeo; Hosaka, Akio; Manaka, Nobuzi; and Ezoe, Mituhiko, 4,142,482, Cl. 123-32.0EE.

Hosoki, Shigeyuki; and Okano, Hiroshi, to Hitachi, Ltd. Field emission cathode of glassy carbon and method of preparation. 4,143,292, Cl. 313-336.000.

Hosokoshi, Kakuichiro; Nakamura, Hiroto; and Okamoto, Takami, to Matsushita Electronics Corporation. In line electron guns for color tubes, each having a control grid with vertically elliptical aperture. 4,143,293, Cl. 313-409.000.

Hough, William V.: *See—*
Burke, Aaron R.; Hough, William V.; and Hefferan, Gerald T., 4,142,902, Cl. 106-1.230.

Houle, Gratien. Straw cutting machine. 4,142,686, Cl. 241-101.700.

Howard, John W., Jr. Games. 4,142,716, Cl. 273-1.00R.

Howard, Milton L. Building enclosure made from standard construction unit in side walls and roof deck. 4,142,340, Cl. 52-262.000.

Howell, William L. Sphygmomanometer pressure releasing means. 4,142,518, Cl. 128-2.05G.

Hoya Lens Corporation: *See—*
Tarumi, Niro; and Tuchiya, Makoto, 4,143,017, Cl. 260-29.70H.

Hoyt, Edwin R.: *See—*
Jungers, James W.; and Hoyt, Edwin R., 4,142,342, Cl. 52-585.000.

Hradcovsky, Rudolf R.; and Kozak, Otto R., to Solargen Electronics, Ltd. Lead crystal storage cells and storage devices made therefrom. 4,143,216, Cl. 429-204.000.

Hruza, Denis E., Sr.: *See—*
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,143,074, Cl. 260-586.00G.

Hsieh, Jaw J., to Massachusetts Institute of Technology. Fast-sweep growth method for growing layers using liquid phase epitaxy. 4,142,924, Cl. 148-171.000.

Hubele, Adolf; Eckhardt, Wolfgang; and Kunz, Walter, to Ciba-Geigy Corporation. Sulfonylglycolic anilide fungicides. 4,143,155, Cl. 424-303.000.

Huber, Ariane, heir: *See—*
Huber-Nuesch, Wernhard, deceased; Huber, Fabienne, heir; and Huber, Ariane, heir, 4,143,188, Cl. 427-386.000.
Huber, Ernst: *See—*
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Huber, Fabienne, heir: *See—*
Huber-Nuesch, Wernhard, deceased; Huber, Fabienne, heir; and Huber, Ariane, heir, 4,143,188, Cl. 427-386.000.
Huber, Josef: *See—*
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Huber-Nuesch, Susy, heir: *See—*
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Huber-Nuesch, Wernhard, deceased (by Huber-Nuesch, Susy, heir); by Huber, Fabienne, heir; and by Huber, Ariane, heir, to Ciba-Geigy Corporation. Use of aqueous resin solutions as binders and impregnating agents. 4,143,188, Cl. 427-386.000.
Huddy, Robert A.: *See—*
Louderback, Allan L.; and Huddy, Robert A., 4,142,985, Cl. 252-106.000.
Hudgin, Donald E., to Atlantic Richfield Company. Ethylene carbon monoxide graft copolymers. 4,143,096, Cl. 260-878.00R.
Hughes Aircraft Company: *See—*
Chernick, Leon, 4,143,373, Cl. 343-17.1PF.
Hulsmann, Werner: *See—*
Dreyer, Heinz; Bolwin, Heinz; and Hulsmann, Werner, 4,142,685, Cl. 239-655.000.
Hultman, Hans E.; and Strid, Alexander, to U.S. Philips Corporation. Signal distortion correction circuit in teleprinter equipment. 4,143,239, Cl. 178-68.000.
Hunsinger, Bill J., to Magnavox Company, The. Acoustic surface wave device with improved transducer. 4,143,340, Cl. 333-151.000.
Hunter, Don L.; and Belles, Wayne S., to United States Borax & Chemical Corporation. Substituted benzimidazole compounds and use as herbicides. 4,142,886, Cl. 71-92.000.
Hunter, Ronald A.: *See—*
Pilgrim, James F.; and Hunter, Ronald A., 4,143,187, Cl. 427-358.000.
Hurd, Charles D.; and Loomis, Robert P., to International Business Machines Corporation. Method of fabricating stainless steel aluminum rotor. 4,143,259, Cl. 219-121.0EM.
Hurst, Kurt: *See—*
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Husky Storage Systems, Inc.: *See—*
Vargo, William R., 4,142,638, Cl. 211-187.000.
Husman, Robert J., to Sentry Products, Inc. Ultrasonic signal generating device. 4,142,478, Cl. 116-137.00A.
Hutchison, Bruce R.; and Swanson, Arthur M., to Maxfibe, Inc. Coated fibrous cellulose product and process. 4,143,163, Cl. 426-96.000.
Huwels, Wilhelm: *See—*
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Hynd, Martin W.; O'Reilly, James M.; and Murison, Alexander S., to Burroughs Corporation. Loading and unloading mechanism for record disk apparatus. 4,142,730, Cl. 274-9.00B.
Hyner, Jacob; and Gradowski, Stephen, to Whyco Chromium Company, Inc. Multi-layer plating for improved corrosion resistance. 4,143,210, Cl. 428-646.000.
Hyster Company: *See—*
Vanderzanden, Allan J.; and Ozawa, Max K., 4,142,606, Cl. 181-231.000.
Ichida, Shunji, to Honeywell Inc. Temperature detector. 4,143,347, Cl. 338-28.000.
Ides, Eugene S. Piston cylinder assembly. 4,142,446, Cl. 91-26.000.
Idstrom, Bo T.: *See—*
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Ieki, Hideharu: *See—*
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Igarasi, Seizi: *See—*
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Iguchi, Takashi: *See—*
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Iijima, Tetsuya, to Nissan Motor Company, Limited. Downshift control apparatus for automatic power transmission. 4,142,613, Cl. 192-4.00A.
Iizawa, Yoshihiro, to Ikebukuro Horo Kogyo Co., Ltd. Glass composition for alkali-resistant glass fiber. 4,142,906, Cl. 106-50.000.
Ikawa, Kazuo, to Nissan Motor Company, Limited. Shock absorbing device. 4,142,423, Cl. 74-492.000.
Ikebukuro Horo Kogyo Co., Ltd.: *See—*
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Imler, Vaughn R., to PPG Industries, Inc. Controlling buffeting during the tempering of glass sheets. 4,142,882, Cl. 65-114.000.
Imondi, Anthony R.; and Wolgemuth, Richard L., to Warren-Teed Laboratories, Inc. Method for treating kidney stones. 4,143,130, Cl. 424-81.000.
Imperato, Eugene G.: *See—*
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Imperial Chemical Industries Limited: *See—*
Bamforth, John R.; and Higgins, Raymond, 4,143,087, Cl. 260-683.15R.
Chinchen, Godfrey C., 4,142,988, Cl. 252-373.000.
Dalton, Raymond F., 4,142,952, Cl. 204-106.000.
Main, Brian G.; and Barlow, Jeffrey J., 4,143,140, Cl. 424-248.540.
Imperial Group Limited: *See—*
Perkins, Paul R.; and Bale, Christopher R., 4,142,535, Cl. 131-17.0AC.
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Industrial Electronic Hardware: *See—*
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Industrial Electronics Service Company: *See—*
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Industrie-Werke Karlsruhe Augsburg Aktiengesellschaft: *See—*
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Ingersoll-Rand Company: *See—*
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Inland Container Corporation: *See—*
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Inoue, Atushi; and Ieki, Hideharu, to Murata Manufacturing Co., Ltd. Acoustic surface wave interaction device. 4,143,343, Cl. 333-194.000.
Inoue, Hiroo; and Takagi, Makoto, to Nippon Air Brake Co., Ltd., The. Compound remote control device for the propulsion engine of a ship's variable-pitch propeller. 4,142,829, Cl. 416-25.000.
Inoue, Hiroo: *See—*
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Inoue, Mitsuo: *See—*
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Inoue, Takashi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Ignition system means for a rotary piston engine. 4,142,505, Cl. 123-211.000.
Institut Francais du Petrole: *See—*
Masson, Bernard; Rabilloud, Guy; and Sillion, Bernard, 4,143,077, Cl. 568-636.000.
Intel Corporation: *See—*
Morgan, William L., 4,142,926, Cl. 148-187.000.
International Business Machines Corporation: *See—*
DiMaria, Donelli J.; and Young, Donald R., 4,143,393, Cl. 357-52.000.
Engler, Edward M.; and Kaufman, Frank B., 4,142,783, Cl. 350-357.000.
Hurd, Charles D.; and Loomis, Robert P., 4,143,259, Cl. 219-121.0EM.
McGinnis, Bernard W.; and Weidenhammer, James A., 4,143,408, Cl. 360-98.000.
Nettles, Michael L.; and Stevenson, Peter A., 4,142,661, Cl. 226-97.000.
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International Flavors & Fragrances Inc.: *See—*
Hall, John B.; Wiegers, Wilhelmus J.; Hill, Ira D.; Novak, Robert M.; and Schmitt, Frederick L., 4,142,998, Cl. 252-522.000.
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,143,074, Cl. 260-586.00G.
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International Paper Company: *See—*
Capo, James L.; and Daher, James, 4,142,635, Cl. 206-622.000.
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International Standard Electric Corporation: *See—*
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Ubel, Helmut, 4,142,700, Cl. 246-182.00B.
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International Telephone & Telegraph Corp.: *See—*
Jezo, Maurice L. J., 4,143,376, Cl. 343-106.00R.
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Iowa State University Research Foundation, Inc.: *See*—
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Ironside, John M., to Lucas Industries Limited. Operation timing control system for an internal combustion engine. 4,142,483, Cl. 123-32.0EB.

Irvine, Alexander M.: *See*—
McCrae, James M.; Irvine, Alexander M.; Macpherson, Ian A.; and Cavalieri, Vincent J., 4,143,058, Cl. 260-438.100.

Irwin, Jere F. Apparatus for manufacturing a lockable carton. 4,142,848, Cl. 425-298.000.

Irwin, Jere F. Method of matched-mold forming from a hot sheet of polystyrene foam, an open vessel having an outward sloping flat side wall with at least one hole in said side wall. 4,143,111, Cl. 264-156.000.

Iseki, Shigeru: *See*—
Morozumi, Mituharu; Arai, Masataka; and Iseki, Shigeru, 4,143,110, Cl. 264-117.000.

Ishiba, Teruyuki: *See*—
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Ishidoshiro, Hiroshi: *See*—
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Ishihara, Masao: *See*—
Sato, Yuzuru; Asano, Masao; Ishihara, Masao; and Terada, Sadatugu, 4,142,899, Cl. 96-77.000.

Ishii, Hiroki: *See*—
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Ishii, Takashi; Nishida, Katsutoshi; Komatsu, Michiyasu; and Tsuge, Akihiko, to Tokyo Shibaura Electric Co., Ltd. Silicon nitride-based sintered material and method for manufacturing the same. 4,143,107, Cl. 264-65.000.

Ishikawa, Noritoki, to Ryobi, Ltd. Removal apparatus for die casting machine. 4,142,639, Cl. 414-753.000.

Ishikawa, Youhei: *See*—
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Ishimaru, Kenzo; and Gropper, Lee, to Beckman Instruments, Inc. Chylomicron rotor. 4,142,670, Cl. 233-20.00R.

Isolab, Incorporated: *See*—
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Acuff, Kenneth J., 4,142,856, Cl. 23-230.00B.
Acuff, Kenneth J., 4,142,857, Cl. 23-230.00B.
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Isono, Takashi: *See*—
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Istoshin, Stanislav J.: *See*—
Lezgintsev, Georgy M.; Istoshin, Stanislav J.; and Belyavsky, Mikhail A., 4,142,818, Cl. 405-191.000.

Itakura, Gen; and Iguchi, Takashi, to Matsushita Electric Industrial Co., Ltd. Semiconductive ceramics. 4,143,207, Cl. 428-539.000.

Itoh, Akihiko. Micro processor controlled sewing machine pattern generator. 4,142,473, Cl. 112-158.00E.

ITT Industries, Inc.: *See*—
Lovelace, David F., 4,142,953, Cl. 204-129.300.

Ivin, Jury F.; Shevelin, Boris P.; Sokolov, Vasily I.; and Levischev, Arkady N. Rotor of centrifugal separator. 4,142,671, Cl. 233-29.000.

Iwabuchi, Yoshitaka; Takashima, Seiichi; and Nishiyama, Togo, to Victor Company of Japan, Ltd. Transducer feeding mechanism in an apparatus for recording and reproducing a signal on and from a rotary recording medium. 4,143,409, Cl. 360-106.000.

Iwahara, Makoto; Maruyama, Fumio; Fujiki, Goro; Mori, Toshinori; Hiyama, Norio; and Kikuchi, Mitsuru, to Victor Company of Japan, Limited. Binaural sound reproducing system. 4,143,244, Cl. 179-1.00G.

Iyer, Rajaram, to Foseco Technik AG. Foundry resin compositions comprising furfuryl alcohol and a copolymer of styrene and allyl alcohol. 4,143,022, Cl. 260-30.4SB.

Izu, Masatsugu, to Energy Conversion Devices, Inc. Imaging film of sensitizing layer upon UV-sensitive diazo layer. 4,142,898, Cl. 96-75.000.

J. P. Stevens & Co., Inc.: *See*—
Jasionowicz, Albert J.; and Saffadi, Richard R., 4,143,197, Cl. 428-225.000.

Jacobsen, Robert G.; Warner, Thomas H.; and Misunas, David P., to Misunas, David P. Impulse noise removing apparatus. 4,143,333, Cl. 330-149.000.

Jacobson, Allan J.; and Whittingham, M. Stanley, to Exxon Research & Engineering Co. Cells having cathodes containing chalcogenide compounds of the formula M_xFeX_2 and species thereof exhibiting alkali metal incorporation. 4,143,213, Cl. 429-112.000.

Jager, Horst, to Ciba-Geigy Corporation. Method of finishing synthetic organic fibrous material, in particular of providing it with an antistatic finish. 4,143,206, Cl. 428-474.000.

Jahn, Walter: *See*—
Scholz, Hansjurgen; Jahn, Walter; and Gimbel, Jurgen, 4,142,274, Cl. 24-163.00R.

Jahrig, Gunter: *See*—
Karle, Herbert; and Jahrig, Gunter, 4,142,690, Cl. 242-46.400.

James, David R.: *See*—
Duckworth, George; and James, David R., 4,143,312, Cl. 318-649.000.

Janssen Bennynck, Christian M. M., to Corning Glass Works. Method and apparatus for coupling tubular members. 4,142,744, Cl. 285-368.000.

Jardin, Hans: *See*—
Lutz, Alfons; Jardin, Hans; Bienert, Horst; and Kohlpaintner, Georg, 4,142,761, Cl. 296-137.00B.

Jarmotz, Paul. Audible speed indicator. 4,143,352, Cl. 340-53.000.

Jarski, William C.: *See*—
Marsh, Gerald J.; Reid, Kenneth H.; and Jarski, William C., 4,142,737, Cl. 280-747.000.

Jasionowicz, Albert J.; and Saffadi, Richard R., to J. P. Stevens & Co., Inc. Aramid yarn fabrics and method of dimensional stabilization of same by heat setting. 4,143,197, Cl. 428-225.000.

Jassawalla, Jal S.; Chen, Herbert; and Olaffson, Ingvar, to Andros Incorporated. Cassette for intravenous delivery system. 4,142,524, Cl. 128-214.00F.

Jay, Pierre; and Schwachhofer, Ghislain, to Rhone-Poulenc Industries. Phthalate mixtures useful as liquid dielectrics. 4,142,983, Cl. 252-64.000.

Jefferies, Patrick J.; and Ambrosiano, Nicholas A., to Sterling Drug Inc. Polyaminomethylated monoazo and disazo colorants. 4,143,034, Cl. 260-160.000.

Jefferson, Douglas: *See*—
Chavis, Yvonne, 4,143,191, Cl. 428-13.000.

Jenkinson, Richard D.; and Carder, Charles H., to Union Carbide Corporation. Radiation curable coating compositions. 4,143,013, Cl. 260-29.1SB.

Jenoptik Jena G.m.b.H. Jena: *See*—
Marold, Thomas; and Feist, Wieland, 4,143,268, Cl. 250-231.0SE.

Jensen, Ernst: *See*—
Ballreich, Kurt; Jensen, Ernst; Ketterl, Alfred; and Stahlmann, Rudolf, 4,142,466, Cl. 102-87.000.

Jensen, Harbo P., to Chevron Research Company. Hydroprocessed shale oil including thermally treating and coking steps. 4,142,961, Cl. 208-91.000.

Jespersen, Paul W., to Georgia-Pacific Corporation. Reserve roll feed mechanism for dispenser for flexible sheet material. 4,142,431, Cl. 83-335.000.

Jewell, Steven R.; and Brown, Albert R., to Continental Group, Inc., The. One piece corrugated container. 4,142,665, Cl. 229-33.000.

Jezo, Maurice L. J., to International Telephone & Telegraph Corp. Method for sampling Tacan signal envelope. 4,143,376, Cl. 343-106.00R.

Johannesen, Donald D., to Bendix Corporation, The. Disc brake with mechanical actuator. 4,142,611, Cl. 188-72.900.

Johannsen, Peter; Peter, Julius; and Mauk, Gerhard, to Continental Gummi-Werke Aktiengesellschaft. Pneumatic vehicle tire. 4,142,567, Cl. 152-353.00R.

Johansen, Ole B. Arrangement in sanitary closet systems. 4,142,261, Cl. 4-300.000.

John Wyeth & Brother Limited: *See*—
Boyle, John T. A., 4,143,148, Cl. 424-270.000.

Johns-Manville Corporation: *See*—
Wenda, Alojzy; and Olds, Leonard E., 4,142,880, Cl. 65-29.000.

Johnson, Albert O.; Holiman, William E.; and Buchanan, Stephen D. Apparatus for handling waste including rubber tires. 4,142,688, Cl. 241-236.000.

Johnson, Bradley W. Roof or floor CB radio mount. 4,143,320, Cl. 325-15.000.

Johnson Controls, Inc.: *See*—
Colla, Jeannine O.; and Thoma, Paul E., 4,142,400, Cl. 73-23.000.

Johnson, Gordon C.: *See*—
Weinberg, Kurt; and Johnson, Gordon C., 4,143,057, Cl. 260-429.00R.

Johnson, Gregory R.; Miles, Malcolm G.; Salyer, Ival O.; and Hardy, Edgar E., to Monsanto Company. Solar collector using total internal reflectance. 4,143,234, Cl. 136-89.0PC.

Johnson, Howard L., to Caterpillar Tractor Co. Method for assembling a cartridge-type valve. 4,142,282, Cl. 29-157.10R.

Johnson & Johnson: *See*—
Turner, Robert B., 4,143,112, Cl. 264-249.000.

Johnson, Lawrence P.; and Vogel, William C., to General Motors Corporation. Cap assembly for a fuel tank. 4,142,648, Cl. 220-203.000.

Johnson, Lonnie G.; and Lederer, John M. Digital distance measuring instrument. 4,143,267, Cl. 250-231.00R.

Johnson, Matthey & Co., Limited: *See*—
Sermon, Paul A., 4,143,120, Cl. 423-239.000.

Johnson, Michael R.: *See*—
Hess, Hans-Jurgen E.; Johnson, Michael R.; Bindra, Jasjit S.; and Schaaf, Thomas K., 4,143,051, Cl. 260-332.20A.

Johnson, Raymond E.: *See*—
Claar, Leslie M.; and Johnson, Raymond E., 4,142,841, Cl. 417-213.000.

Johnson, Rubein V. Adjustable speaker cabinet. 4,142,603, Cl. 181-148.000.

Johnston, Linda G.: *See*—
Baigrie, Brian D.; Bailey, Joseph; Johnston, Linda G.; and Mijovic, Miroslav V., 4,142,891, Cl. 96-29.00D.

Johnston, Russell A., to Otis Engineering Corporation. Mechanical detent jars. 4,142,597, Cl. 175-304.000.

Joinnet, Etienne: *See*—
Cayzac, Jacques C.; le Can, Claude; Brun, Roger; Devillers, Jacques; and Joinnet, Etienne, 4,143,365, Cl. 340-347.0SH.

Joly, Jean: *See*—
Bardon, Pierre; Guillermin, Rene; and Joly, Jean, 4,143,199, Cl. 428-369.000.

Jones, Millard L., Jr., to Owens-Illinois, Inc. Fluid cooling of glass molds. 4,142,884, Cl. 65-356.000.

Jones, W. Dale. Rockable against-the-wall type reclining chair. 4,142,762, Cl. 297-84.000.

Joo', Louis A.; and Miller, Frederick C., to Great Lakes Carbon Corporation. Process for manufacture of positive electrode for lithium/-metal sulfide secondary cell. 4,143,217, Cl. 429-218.000.

Jordan, Bertram L.; and Mitchell, John D., to Harrington Manufacturing Company. Speed control unit for driving the pick-up reel of a peanut combine. 4,142,348, Cl. 56-10.200.

Jorne, Jacob: *See*—
Creamer, Edward D.; Krumpelt, Michael; and Jorne, Jacob, 4,142,950, Cl. 204-96.000.

Joslyn Mfg. and Supply Co.: *See*—
Gebhart, Carlton E., 4,142,336, Cl. 52-166.000.

Jung, Richard G.: *See*—
Mallozzi, Philip J.; Epstein, Harold M.; Jung, Richard G.; Applebaum, David C.; Fairand, Barry P.; Gallagher, William J.; Uecker, Ronald L.; and Muckerheide, Myron C., 4,143,275, Cl. 250-503.000.

Jung, Wilhelm; and Kister, Horst, to VDO Adolf Schindling AG. Device for continuously measuring the liquid level in a container. 4,142,415, Cl. 73-304.00C.

Jungers, James W.; and Hoyt, Edwin R., to Pioneer Manufacturing, Inc. Joint and method for connecting structural members. 4,142,342, Cl. 52-585.000.

Junginger, Hans-Georg: *See*—
Zwanenburg, Dirk J.; and Junginger, Hans-Georg, 4,142,987, Cl. 252-301.360.

Juviller, John J., executor: *See*—
Brown, Edward G.; Turner, Eric J.; Smithers, Philip G. K., deceased; and Juviller, John J., executor, 4,142,268, Cl. 15-250.320.

K & M Plastics, Inc.: *See*—
Fogle, Alva E., Jr.; Brennan, William E.; and Passino, Jacque, 4,142,757, Cl. 296-63.000.

Kabushiki Kaisha Daini Seikosha: *See*—
Kusumoto, Yasuo, 4,142,359, Cl. 58-23.00R.

Kabushiki Kaisha Kawai Gakki Seisakusho: *See*—
Kameyama, Seiji; and Watanabe, Hironori, 4,142,432, Cl. 84-1.010.

Kabushiki Kaisha Mitutoyo Seiskusho: *See*—
Nishina, Shingo; and Nakaoki, Tokuzo, 4,142,295, Cl. 33-172.00B.

Kabushiki Kaisha Suwa Seikosha: *See*—
Akahane, Yoshikazu, 4,142,360, Cl. 58-23.00R.

Kabushiki Kaisha Toyota Chuo Kenkyusho: *See*—
Yamanaka, Teruo; Kato, Takayuki; Ozeki, Osamu; Sato, Kazuo; and Bito, Minoru, 4,143,370, Cl. 343-7.0VM.

Kachik, Robert H.: *See*—
Pignocco, Arthur J.; and Kachik, Robert H., 4,142,556, Cl. 138-146.000.

Kachman, Robert D., to Facet Enterprises, Inc. Valve with indicator circuit. 4,142,973, Cl. 210-90.000.

Kaeding, Warren N.; and Young, Lewis B., to Mobil Oil Corporation. Di-alkylbenzene isomer mixtures. 4,143,084, Cl. 260-671.00R.

Kagoura, Tetsuro, to Yoshida Kogyo K.K. Door latch. 4,142,750, Cl. 292-210.000.

Kahn, Leonard R. Constant amplitude interference squelch system. 4,143,325, Cl. 325-478.000.

Kaiser, Reinhold, to Licentia Patent-Verwaltungs-G.m.b.H. Junction type field effect transistor. 4,143,386, Cl. 357-22.000.

Kaiser Steel Corporation: *See*—
Blatnik, George A.; and Kosareff, John W., 4,142,663, Cl. 228-147.000.

Kakehasi, Ikutaro, to Roland Corporation. Envelope circuit for a keyboard type electronic musical instrument. 4,142,437, Cl. 84-1.240.

Kalcevic, Victor, to Dow Chemical Company, The. Separation and recovery of carboxylic acids from water. 4,143,066, Cl. 562-513.000.

Kalfoglou, George, to Texaco Inc. Chrome lignosulfonates as additives in oil recovery processes involving chemical recovery agents. 4,142,582, Cl. 166-273.000.

Kamath, Venkatesh: *See*—
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,143,074, Cl. 260-586.00G.

Kameyama, Seiji; and Watanabe, Hironori, to Kabushiki Kaisha Kawai Gakki Seisakusho. Electronic musical instrument. 4,142,432, Cl. 84-1.010.

Kamibayashi, Tetsusaburo: *See*—
Kobayashi, Toshihiko; and Kamibayashi, Tetsusaburo, 4,143,240, Cl. 178-19.000.

Kamohara, Hideaki: *See*—
Yoshitomi, Yuji; Tamura, Zensuke; Kamohara, Hideaki; Omura, Keiji; Murakami, Yoshimasa; Takata, Tadasi; and Nuwa, Teruo, 4,142,581, Cl. 165-173.000.

Kampe, Wolfgang: *See*—
Wiedemann, Fritz; Kampe, Wolfgang; Thiel, Max; Bartsch, Wolfgang; and Roesch, Egon, 4,143,149, Cl. 424-273.00P.

Kano, Gota: *See*—
Koike, Susumu; and Kano, Gota, 4,143,286, Cl. 307-238.000.

Kapany, Narinder S.; Hardy, Edgar E.; and Orofino, Thomas A., to Monsanto Research Corporation. Solar energy collector. 4,143,233, Cl. 136-89.0PC.

Kapur, Desh K.: *See*—
Davis, H. Dean; and Kapur, Desh K., 4,142,839, Cl. 417-89.000.

Karl, Robert D.; Engh, Ian B.; and Bennison, Harry, to Amtel, Inc. Swivel assembly. 4,142,767, Cl. 339-1.00R.

Karle, Herbert; and Jahrig, Gunter, to Industrie-Werke Karlsruhe Augsburg Aktiengesellschaft. Spool carrier, particularly for winding up textile threads or the like. 4,142,690, Cl. 242-46.400.

Karll, Robert E.; and Lee, Richard J., to Standard Oil Company (Indiana). Mannich reaction products made with alkyphenol substituted aliphatic unsaturated carboxylic acids. 4,142,980, Cl. 252-51.50A.

Karmell, Yale, to Samuel Bingham Company. Polyurethane-derived plasticizer for polyacrylonitrile printing rolls. 4,143,092, Cl. 260-859.00R.

Kasajima, Fumio: *See*—
Shikinami, Yasuo; Iida, Kosuke; Hata, Kunihiro; and Kasajima, Fumio, 4,142,956, Cl. 204-159.140.

Kashiwa, Norio: *See*—
Toyota, Akinori; Minami, Syuji; and Kashiwa, Norio, 4,143,223, Cl. 526-125.000.

Kastening, Bertel: *See*—
Faul, Wolfgang; and Kastening, Bertel, 4,142,949, Cl. 204-84.000.

Kasuga, Muneo: *See*—
Nishikawa, Masaji; and Kasuga, Muneo, 4,142,791, Cl. 355-3.0SC.

Kato, Kaoru; and Yamashita, Yasuhiko, to Daikin Kogyo Co. Ltd. Controlled atmosphere storage method. 4,142,372, Cl. 62-78.000.

Kato, Kazumi: *See*—
Yoshitoshi, Makoto; Kawashima, Isao; Kishimoto, Hideo; Terai, Masaaki; and Kato, Kazumi, 4,143,247, Cl. 179-81.00R.

Kato, Takayuki: *See*—
Yamanaka, Teruo; Kato, Takayuki; Ozeki, Osamu; Sato, Kazuo; and Bito, Minoru, 4,143,370, Cl. 343-7.0VM.

Katz, Ira: *See*—
Mookherjee, Braja D.; Withycombe, Donald A.; Katz, Ira; Goossens, Alfred E.; Vock, Manfred H.; Evers, William J.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,143,173, Cl. 426-535.000.

Kaufman, Frank B.: *See*—
Engler, Edward M.; and Kaufman, Frank B., 4,142,783, Cl. 350-357.000.

Kawade, Junpei: *See*—
Kumaki, Yoshihiro; Kawade, Junpei; Takano, Toshiaki; and Inoue, Mitsuo, 4,142,763, Cl. 299-1.000.

Kawaguchi, Hiroshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Hydraulic pressure control valve for use in a hydraulic brake system. 4,142,764, Cl. 303-6.00R.

Kawakami, Hakuhei: *See*—
Esaki, Hideya; Hirao, Takashi; and Kawakami, Hakuhei, 4,143,388, Cl. 357-23.000.

Kawasaki Jukogyo Kabushiki Kaisha: *See*—
Uda, Ryoji; and Kimura, Tomoya, 4,142,504, Cl. 123-198.00D.

Kawashima, Isao: *See*—
Yoshitoshi, Makoto; Kawashima, Isao; Kishimoto, Hideo; Terai, Masaaki; and Kato, Kazumi, 4,143,247, Cl. 179-81.00R.

Kay Laboratories, Inc.: *See*—
Watson, Susan S., 4,142,508, Cl. 126-263.000.

Kazanovich, Boleslav B.; Santurian, Germes R.; Fischenko, Petr A.; Potapenko, Iosif A.; Budnyatsky, David M.; Akopdzhanian, Felix K.; Oganesian, Tsolak R.; Kazarian, Edvard S.; Dzhanbaev, Salikh I.; Seryapov, Alexandr I.; Shakhnazarian, Albert T.; Mezhdo, Murad S.; Bachilo, Leverie L.; Bushmin, Anatoly P.; Gershman, Mikhail B.; Samokhvalov, Anatoly I.; and Oganesian, Georgy S. Air radiator cooling tower. 4,142,579, Cl. 165-84.000.

Kazarian, Edvard S.: *See*—
Kazanovich, Boleslav B.; Santurian, Germes R.; Fischenko, Petr A.; Potapenko, Iosif A.; Budnyatsky, David M.; Akopdzhanian, Felix K.; Oganesian, Tsolak R.; Kazarian, Edvard S.; Dzhanbaev, Salikh I.; Seryapov, Alexandr I.; Shakhnazarian, Albert T.; Mezhdo, Murad S.; Bachilo, Leverie L.; Bushmin, Anatoly P.; Gershman, Mikhail B.; Samokhvalov, Anatoly I.; and Oganesian, Georgy S., 4,142,579, Cl. 165-84.000.

Kearns, James D., to Union Carbide Corporation. Penetration enhanced fluid mixing method for thermal hydrocarbon cracking. 4,142,963, Cl. 208-129.000.

Keedy, Edgar L. Vehicle drag reducer. 4,142,755, Cl. 296-1.00S.

Keller, Karlfried: *See*—
Honel, Hans; Keller, Karlfried; Michel, Walter; and Schon, Manfred, 4,143,016, Cl. 260-29.40R.

Kelley, Fred W., Jr., to General Electric Company. RMS Transducer and voltage regulating system employing the same. 4,143,315, Cl. 323-24.000.

Kellner, Jackson M.: *See*—
Dixon, Robert L.; Maxsted, Malcolm D.; and Kellner, Jackson M., 4,142,593, Cl. 175-53.000.

Kelly, James P. Luminaire mounting arrangement. 4,143,413, Cl. 362-418.000.

Kelm, Reinhold, to Baumgarten Montage GmbH. Bending machine. 4,142,395, Cl. 72-319.000.

Kelsey-Hayes Company: *See*—
Rozmus, Walter J., 4,142,888, Cl. 75-201.000.

Kemp, Charles L., to General Electric Company. Coffeemaker pump system. 4,142,840, Cl. 417-209.000.

Kemp, Dennis E., Jr.; and Morin, Albert E. Shredder-feed device. 4,142,689, Cl. 241-247.000.

Kemp, John, to Lawtons of Liverpool Limited. Rotary wheel printing machine. 4,142,465, Cl. 101-330.000.

Kempkes, Herbert T.: *See—*
Shanbhag, Sudhakar P.; Ku, Shun; Epps, Jackie R.; and Kempkes, Herbert T., 4,143,164, Cl. 426-104.000.
Kendall Company, The: *See—*
Binard, William J.; Ciarico, Anthony J.; Anglada, Leonard R.; and Patel, Bhupendra C., 4,142,525, Cl. 128-218.00R.
Kenigsberg, Irwin J.: *See—*
Niebanck, Charles F.; Klusman, Steven A.; and Kenigsberg, Irwin J., 4,142,698, Cl. 244-17.170.
Keown, John D., to United States of America, Navy. Signal enhancement system. 4,143,350, Cl. 340-5.00R.
Kernforschungsanlage Julich GmbH: *See—*
Faul, Wolfgang; and Kastening, Bertel, 4,142,949, Cl. 204-84.000.
Kersten, Ralf: *See—*
Auracher, Franz; and Kersten, Ralf, 4,142,877, Cl. 65-4.00B.
Ketterl, Alfred: *See—*
Ballreich, Kurt; Jensen, Ernst; Ketterl, Alfred; and Stahlmann, Rudolf, 4,142,466, Cl. 102-87.000.
Kiehs, Karl: *See—*
Loeffler, Hans-Peter; and Kiehs, Karl, 4,143,064, Cl. 260-456.00R.
Kiener, Karl. Apparatus for the production of combustible gas. 4,142,867, Cl. 48-76.000.
Kikuchi, Mitsuru: *See—*
Iwahara, Makoto; Maruyama, Fumio; Fujiki, Goro; Mori, Toshinori; Hiyama, Norio; and Kikuchi, Mitsuru, 4,143,244, Cl. 179-1.00G.
Kikuchi, Yasunobu: *See—*
Fujii, Yuichi; Suzuki, Yasuo; Yoshikawa, Rikizo; Seo, Kiyokazu; Mori, Katsunori; Kikuchi, Yasunobu; and Yoshida, Kazuo, 4,142,701, Cl. 248-544.000.
Kilet, Charlie R.: *See—*
Oswald, Robert A.; and Kilet, Charlie R., 4,142,680, Cl. 235-92.0TA.
Killian, Gerald I. Carriage and latch assembly for elevation adjustment for archery bow sights. 4,142,298, Cl. 33-265.000.
Kilminster, Kenneth N.: *See—*
Holstead, Colin; Kilminster, Kenneth N.; and Simons, Michael J., 4,142,901, Cl. 96-139.000.
Kim, Chung K.; and Wheeler, Alfred J., to Raytheon Company. Low parasitic capacitance diode. 4,143,384, Cl. 357-15.000.
Kim, Keun Y.; and Crutchfield, Marvin M., to Colgate Palmolive Company. Oral compositions for calculus retardation. 4,143,128, Cl. 424-54.000.
Kimball International, Inc.: *See—*
Welsh, Alan B., 4,143,327, Cl. 328-61.000.
Kimura, Katunori: *See—*
Mizukami, Satoshi; Shoyama, Etsuhiko; Matsunobu, Kenji; Taniguchi, Masatosi; Konno, Kuniyoshi; and Kimura, Katunori, 4,143,290, Cl. 310-270.000.
Kimura, Satoshi, to Citizen Watch Co. Ltd. Electro-optical display timepiece. 4,142,361, Cl. 58-50.00R.
Kimura, Tomoya: *See—*
Uda, Ryoji; and Kimura, Tomoya, 4,142,504, Cl. 123-198.00D.
Kimura, Tsurugi: *See—*
Nakasugi, Hajime; Kimura, Tsurugi; Tanimoto, Teruo; and Sakimoto, Tsutomu, 4,142,713, Cl. 266-87.000.
King, Gerard J.; and Martino, Joseph F., Jr., to United States of America, Army. Method of making silicon-insulator-polysilicon infrared image device utilizing epitaxial deposition and selective etching. 4,142,925, Cl. 148-175.000.
Kinsley, Jonathan S.: *See—*
Berard, Clement A., Jr.; and Kinsley, Jonathan S., 4,143,282, Cl. 307-43.000.
Kinzer, Jay, to Sanilogical Corporation. Apparatus for the treatment of sewage. 4,142,975, Cl. 210-195.00R.
Kirby, James L., to Reynolds Metals Company. Shield for electromagnetic casting. 4,142,572, Cl. 164-147.000.
Kirsch, Wilhelm; Tecl, Bohuslav; and Fahrbach, Erich, to Carl Freudenberg, Firma. Scouring and cleaning cloth. 4,142,334, Cl. 51-395.000.
Kish, Arthur S., to Murray Corporation. Compressor block and tube assembly. 4,142,843, Cl. 417-313.000.
Kishimoto, Hideo: *See—*
Yoshitoshi, Makoto; Kawashima, Isao; Kishimoto, Hideo; Terai, Masaaki; and Kato, Kazumi, 4,143,247, Cl. 179-81.00R.
Kister, Horst: *See—*
Jung, Wilhelm; and Kister, Horst, 4,142,415, Cl. 73-304.00C.
Kiwala, Jacob: *See—*
Mookherjee, Braja D.; Withycombe, Donald A.; Katz, Ira; Goossens, Alfred E.; Vock, Manfred H.; Evers, William J.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,143,173, Cl. 426-535.000.
Klassen, Ronald W.: *See—*
Gilbert, William J.; and Klassen, Ronald W., 4,143,264, Cl. 250-210.000.
Kleijwegt, Jacob, to Goodyear Tire & Rubber Company, The. Bias tire with embedded wire breakers. 4,142,568, Cl. 152-354.00R.
Klein, Donald R., to Sheller-Globe Corporation. Remote control mirror. 4,142,424, Cl. 74-501.00M.
Klein, Erwin. Cooling device for a liquid-cooled semiconductor power component. 4,142,577, Cl. 165-80.000.
Klein, Gerald B. Fishing rod with line guides thereon affixed by manufactured rod wraps. 4,142,317, Cl. 43-24.000.
Klein, Yitzhak; and Inbar, Dan, to Elscint Ltd. Nuclear imaging device with improved linearity. 4,143,271, Cl. 250-368.000.
Klie, Wolfgang; Fischer, Wolfgang; and Weisshappel, Helmut, to Daimler-Benz Aktiengesellschaft. Vehicle bumper. 4,142,753, Cl. 293-102.000.
Klingbeil, Herbert N., to Canadian General Electric Company Limited. Multiple control circuit with floating setpoint. 4,143,415, Cl. 364-105.000.
Klippert, Heinz; Mielke, Ingolf; and Plewan, Otto, to Hoechst Aktiengesellschaft. Process for the manufacture of suspension polymers of vinyl chloride. 4,143,224, Cl. 526-200.000.
Klockner Ionon GmbH: *See—*
Oppel, Werner, 4,142,957, Cl. 204-164.000.
Klusman, Steven A.: *See—*
Niebanck, Charles F.; Klusman, Steven A.; and Kenigsberg, Irwin J., 4,142,698, Cl. 244-17.170.
Knopf, Alois, to Messerschmitt-Bolkow-Blohm. Method and apparatus for preventing jamming of locating and transmission systems. 4,143,375, Cl. 343-18.00E.
Knowles, William S.; Sabacky, Milton J.; and Vineyard, Billy D., to Monsanto Company. Asymmetric catalysis. 4,142,992, Cl. 252-431.00P.
Knuth, Kenneth V.; and Drinkard, John H., Jr., to Burroughs Corporation. Apparatus and method for inserting solder preforms on selected circuit board back plane pins. 4,142,286, Cl. 29-626.000.
Kobayashi, Kazuo; Yokooku, Katsuhiko; and Nomura, Kazumasa, to Toyo Kogyo Co., Ltd. Exhaust gas purification system. 4,142,492, Cl. 123-119.00A.
Kobayashi, Toshihiko; and Kamibayashi, Tetsusaburo, to Kokusai Denshin Denwa Kabushiki Kaisha. Co-ordinate plate for co-ordinate reader. 4,143,240, Cl. 178-19.000.
Kobe Steel, Ltd.: *See—*
Kohama, Hiroyuki; and Mizukami, Shun-ichi, 4,142,989, Cl. 252-411.00R.
Kobel, Elfreda, administratrix: *See—*
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Koch, Robert L., II, to Geo. Koch Sons, Inc. Radiation cure reactor. 4,143,278, Cl. 250-527.000.
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Koeller, Paul, to Dominion Engineering Works Limited. Draft tube aeration with eductor. 4,142,825, Cl. 415-116.000.
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Kohlpaintner, Georg: *See—*
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Koike, Norio; and Kubo, Masaharu, to Hitachi, Ltd. Photoelectric element in a solid-state image pick-up device. 4,143,389, Cl. 357-31.000.
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Kokusai Denshin Denwa Kabushiki Kaisha: *See—*
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Kolakowski, Ronald L.: *See—*
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Komatsu, Michiyasu: *See—*
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Konno, Kuniyoshi: *See—*
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Koschek, Gerald, to Seimens Aktiengesellschaft. Device for monitoring a radioactive filling level measuring installation. 4,143,270, Cl. 250-357.000.

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Koszi, Louis A.: *See—*
Holbrook, Walter R.; and Koszi, Louis A., 4,142,662, Cl. 228-110.000.

Kovac, Michael G.; Chleck, David J.; and Goodman, Philip, to Panametrics, Inc. Absolute humidity sensors and methods of manufacturing humidity sensors. 4,143,177, Cl. 427-79.000.

Koyama, Mitsuo; Nakagawa, Tadashi; Watanabe, Masanori; Nemoto, Ichiro; and Onda, Eiichi, to Seiko Koki Kabushiki Kaisha. Charging mechanism of a camera shutter. 4,142,789, Cl. 354-249.000.

Koyama, Tamotsu: *See—*
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Kozak, Otto R.: *See—*
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Kraemer, Stefan; Seger, Michael; and Seidl, Alois, to Wasag Chemie GmbH. Light construction concrete of specially low density. 4,142,910, Cl. 106-97.000.

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Steinkamp, Eckhard; Tautz, Jurgen; and Ries, Horst, 4,142,936, Cl. 176-87.000.

Kraiss, Louis R. Boat trailer storage rack. 4,142,637, Cl. 211-182.000.

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Krappatsch, Herbert, to Gossen GmbH. Arrangement for the visual evaluation of photographic themes and for determining the necessary exposures. 4,143,265, Cl. 250-213.00R.

Krasnoff, Eugene L.; and Lindeboom, Herman, to Ingersoll-Rand Company. Hydraulic actuator. 4,142,447, Cl. 91-280.000.

Krauer, Alwin. Slide fasteners. 4,142,275, Cl. 24-205.15R.

Krause, Richard J.; and Zaletel, Joseph, to Henry Valve Company. Valve stem and disc combination and method of assembling same. 4,142,543, Cl. 137-15.000.

Krawczyk, Leroy S.: *See—*
Asperger, Robert G.; Krawczyk, Leroy S.; and Oakes, Billy D., 4,143,119, Cl. 423-226.000.

Krieger, Friedrich, to GG. Noell GmbH, Firma. Bearing support for receiving used fuel elements of nuclear power stations. 4,143,277, Cl. 250-507.000.

Krings, Peter: *See—*
Bloching, Helmut; Krings, Peter; and Pfeiffer, Hans, 4,142,999, Cl. 252-544.000.

Krisinski, Arthur E.; and Parker, Wilbur A., to CPC International Inc. Peanut skin-oil emulsion. 4,143,176, Cl. 426-601.000.

Kruckenberg, Winfried: *See—*
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Kruger, Helmut: *See—*
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Krumpelt, Michael: *See—*
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Krystek, Michael S.: *See—*
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Ku, Shun: *See—*
Shanbhag, Sudhakar P.; Ku, Shun; Epps, Jackie R.; and Kempkes, Herbert T., 4,143,164, Cl. 426-104.000.

Kubo, Hiroshi; Isono, Takashi; Seki, Nansho; and Sato, Noriyuki, to Showa Denko Kabushiki Kaisha. 3-(α,α-Dimethylbenzyl)urea compounds, compositions, and their use as herbicides. 4,143,061, Cl. 260-453.0RW.

Kubo, Masaharu: *See—*
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Kubota, Ltd.: *See—*
Nakano, Keiichi; and Nakai, Koji, 4,142,502, Cl. 123-195.00A.

Kubota, Nobuhisa: *See—*
Harada, Nozomu; and Kubota, Nobuhisa, 4,143,178, Cl. 427-85.000.

Kubota, Yukio, to Sony Corporation. Automatic head scan tracking system. 4,143,405, Cl. 360-10.000.

Kuehn, Frederick J., Jr.; Laukaitis, Joseph A.; and McElhenny, Stuart W., to General Electric Company. Control system for a tertiary winding self-excited generator. 4,143,280, Cl. 290-9.000.

Kuklinski, Henry W. Waste energy recovery system. 4,142,379, Cl. 62-179.000.

Kumaki, Yoshihiro; Kawade, Junpei; Takano, Toshiaki; and Inoue, Mitsuo, to Tekken Construction Co. Ltd. Attitude control means of tunnel boring machine shield. 4,142,763, Cl. 299-1.000.

Kummerman, Henri, to MacGregor International S.A. Device for retracting or extending a movable access ramp. 4,142,640, Cl. 414-139.000.

Kumoi, Tomio: *See—*
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Kunz, Walter: *See—*
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Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
Hisazumi, Nobuyuki; and Uehara, Tsutomu, 4,143,011, Cl. 260-23.0EP.

Kurihara, Yasutoshi: *See—*
Miyoshi, Tadahiko; and Kurihara, Yasutoshi, 4,143,385, Cl. 357-19.000.

Kurita, Shoichi; Hiratsuka, Yoshitaka; and Shuto, Kazuya, to Fujitsu Limited. Digital phase lock loop circuit and method. 4,143,328, Cl. 328-155.000.

Kuriyama, Masao: *See—*
Terada, Yasuhiko; Yasuda, Jun; and Kuriyama, Masao, 4,142,853, Cl. 8-120.000.

Kuroda, Yoshio; Okuhara, Masakuni; Iguchi, Eiko; Aoki, Hatsuo; and Imanaka, Hiroshi, to Fujisawa Pharmaceutical Co., Ltd. Antibiotic phosphonic acid derivatives and production and use thereof. 4,143,135, Cl. 424-211.000.

Kuroiwa, Hiroshi; Ohyama, Yoshishige; Nishimura, Yutaka; and Miyakawa, Nobuaki, to Hitachi, Ltd. Air flow metering apparatus for internal combustion engines. 4,142,407, Cl. 73-118.000.

Kurtz, Robert: *See—*
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Kusumoto, Yasuo, to Kabushiki Kaisha Daini Seikosha. Electronic timepiece. 4,142,359, Cl. 58-23.00R.

Kutzler, John M.: *See—*
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Kuwahara, Kazuyoski: *See—*
Abe, Yuuhei; Mohri, Katsuo; Azuma, Nobuo; Kuwahara, Kazuyoski; Yabe, Yuhiko; and Tominaga, Yasunori, 4,142,375, Cl. 62-158.000.

Kyle, Robert H., to EM Systems, Inc. Compact spiral antenna array. 4,143,380, Cl. 343-895.000.

Laborde, Jean E., to Les' Usines Laprade. Saddle carriages. 4,142,813, Cl. 403-391.000.

Lafrenz, Joseph: *See—*
Cieslak, Richard F.; Balding, John V.; and Lafrenz, Joseph, 4,143,323, Cl. 325-363.000.

Lagher, Gunnar. Temperature sensitive member. 4,142,418, Cl. 73-363.900.

Lahiff, John E., to General Motors Corporation. Engine exhaust gas recirculation system with periodic recalibration of exhaust back pressure reference. 4,142,495, Cl. 123-119.00A.

Lahti, Daniel J.: *See—*
Sargisson, Donald F.; and Lahti, Daniel J., 4,142,365, Cl. 60-204.000.

Laing, Jean W., to Xerox Corporation. Apparatus and method for ozone reduction in electrostatographic reproduction equipment. 4,143,118, Cl. 423-210.000.

Lakra, Paul: *See—*
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Lalancette, Lionel. Toaster for step-by-step toasting. 4,142,459, Cl. 99-334.000.

Lambert, Robert W.: *See—*
Atherton, Frank R.; Hall, Michael J.; Hassall, Cedric H.; Lambert, Robert W.; and Ringrose, Peter S., 4,143,134, Cl. 424-177.000.

Lamboo, Theodorus F., to U.S. Philips Corporation. Gas discharge laser device. 4,142,702, Cl. 248-174.000.

Landt, Richard C., to SPS Technologies, Inc. Blind fastener assembly. 4,142,439, Cl. 85-70.000.

Landwehr, Goetz; Lux, Helmut; and Duemmel, Karl-Heinz, to Andreas Stihl, Firma. Silencer, especially for portable motor chain saws. 4,142,607, Cl. 181-259.000.

Lane, Ronald S. Permanent calendar. 4,142,311, Cl. 40-107.000.

Langseth, Rollin E.: *See—*
Aranguren, William L.; and Langseth, Rollin E., 4,143,241, Cl. 179-15.0AQ.

Lasky, Max; and Perlin, Fred. Stereoscopic viewer and replaceable cartridge therefor. 4,142,778, Cl. 350-135.000.

Last, Anthony J.: *See—*
Peczeli, Charles F.; and Last, Anthony J., 4,142,806, Cl. 366-341.000.

Latenser, James S.; Estes, Roger Q.; and Connor, Gerald I., to Bio-Tronics, Inc. Process and device for the therapeutic treatment of hemorrhoids. 4,142,529, Cl. 128-401.000.

Laufhutte, Dieter; and Gronert, Gunter, to Carl Still, Firma; and Eschweiler Bergwerks-Vereins. Method of processing the residual gases from Claus plants or other sulfur-producing plants. 4,143,122, Cl. 423-574.00R.

Laukaitis, Joseph A.: *See—*
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Lauria, Franceso: *See—*
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Lavigne, William J., Jr., to Carrier Corporation. Flash type subcooler. 4,142,381, Cl. 62-510.000.

Lawtons of Liverpool Limited: *See—*
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Lazure, Germain. Plow for use in laying drain-tile. 4,142,817, Cl. 405-174.000.

Lear Siegler, Inc.: *See—*
Davis, H. Dean; and Kapur, Desh K., 4,142,839, Cl. 417-89.000.

Leaver, Ronald D.: *See*—
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le Can, Claude: *See*—
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Lednicer, Daniel, to Upjohn Company, The. Analgetic ester compounds, compositions and method of use. 4,143,156, Cl. 424-311.000.
Lee, Dennis, to Xerox Corporation. Hysteresis synchronous motor rate servo system. 4,143,311, Cl. 318-611.000.
Lee, Gim F., Jr., to General Electric Company. Polyphenylene ether resin compositions containing a hydrogenated elastomeric block copolymer. 4,143,095, Cl. 260-874.000.
Lee, Jae Y. Serum-plasma separator and transfer apparatus. 4,142,668, Cl. 233-1.00R.
Lee, Richard J.: *See*—
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Lee, Ronald H. D. F., deceased: *See*—
Doubleday, Ian E.; and Lee, Ronald H. D. F., deceased, 4,142,654, Cl. 222-309.000.
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Leeming, Michael R. G.; and Stubbs, John K., to Pfizer Inc. Isothiazole carboxamides of m-aminotetramisole as anthelmintics. 4,143,147, Cl. 424-270.000.
Leff, Michael G.; and Cobb, Ronald W., to Allied Plastics, Inc. Layer separator for a container. 4,142,634, Cl. 206-392.000.
Le Fur, Jean; and Haas, Rene, to Degremont. Process and system for the dehydration of residues. 4,142,971, Cl. 210-77.000.
Le Fur, Jean; and Durot, Jean, to Degremont. Device for extracting sludge from a circular decanter. 4,142,977, Cl. 210-519.000.
Legal, Jules O.: *See*—
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Le Goascoz, Vincent: *See*—
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Lehureau, Jean C.: *See*—
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Leopoldi, Norbert; and Girard, Leland K. Fluid dispenser with flexible outlet tube and pinching valve. 4,142,651, Cl. 222-185.000.
Lepiane, Gloria L.: *See*—
Fix, Linda M.; and Lepiane, Gloria L., 4,142,382, Cl. 63-2.000.
Lepp, William A.; and Legal, Jules O. Dialysis pump system having over-center cam tracks to lock rollers against tubing. 4,142,845, Cl. 417-477.000.
Les' Usines Laprade: *See*—
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Lexel Corporation: *See*—
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Liberty, R. John, to TRW Inc. Magnetic data storage and retrieval system. 4,143,407, Cl. 360-51.000.
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Flammer, Wieland; Weber, Roland; Weiher, Gerhard; and Troner, Jakob, 4,142,288, Cl. 29-628.000.
Kaiser, Reinhold, 4,143,386, Cl. 357-22.000.
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Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., to International Flavors & Fragrances Inc. Alkanoyl dimethylnorbornanes. 4,143,074, Cl. 260-586.00G.
Lignacord GmbH: *See*—
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Lilly Industries Limited: *See*—
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Okumura, Osamu; Nishio, Hiroshi; Ikeuchi, Takashi; and Yamane, Izumi, 4,142,984, Cl. 252-105.000.
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Liu, Gordon: *See*—
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Locker, Howard W. Air diffuser. 4,142,456, Cl. 98-40.00D.
Lockheed Aircraft Corporation: *See*—
Cronin, Michael J., 4,143,410, Cl. 361-93.000.
Loeffler, Hans-Peter; and Kiehs, Karl, to BASF Aktiengesellschaft. Manufacture of β-halocetals or β-haloketals. 4,143,064, Cl. 260-456.00R.
Lohbauer, Kenneth R., to Caterpillar Tractor Co. Crossover plural circuit fluid system. 4,142,445, Cl. 91-6.000.
Lohnes, Robert A.; and Demirel, Turgut, to Iowa State University Research Foundation, Inc. Method and means for testing soils. 4,142,403, Cl. 73-76.000.
LoMaglio, Lewis C.: *See*—
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Long, Charles A., Jr.: *See*—
Long, William J.; Long, Charles A., Jr.; Babanats, Robert L.; Roberts, Larry W.; and Williams, H. Ross, 4,142,430, Cl. 83-23.000.
Long, E. David, to Allied Chemical Corporation. Fuel pressure booster and regulator. 4,142,497, Cl. 123-139.0AN.
Long, William J.; Long, Charles A., Jr.; Babanats, Robert L.; Roberts, Larry W.; and Williams, H. Ross, to Amer-O-Matic Corp. Envelope opener. 4,142,430, Cl. 83-23.000.
Longo, John M.: *See*—
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Louis, Raymond M. R. G. Process for welding glass so that metallic elements pass through the weld bead. 4,142,881, Cl. 65-40.000.
Lovejoy, Elwyn R., to Abrasives International N.V. Abrasive articles prepared from crosslinked aromatic polyimides. 4,142,870, Cl. 51-298.000.
Lovelace, David F., to ITT Industries, Inc. Semiconductor etching. 4,142,953, Cl. 204-129.300.
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Luckey, Franz, to Swiss Aluminium Ltd. Table tennis table. 4,142,718, Cl. 273-30.000.
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Ludwig, George C., to Tom McGuane Industries, Inc. Fuel vapor vent valve. 4,142,677, Cl. 236-101.00E.
Luger, Paul P.; and Nealen, Joseph P., to Pioneer Educational Society, The. Nuclear reactor and production systems with flux-optical digitizer. 4,143,416, Cl. 364-504.000.
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Shah, Syed M. M.; and Luksas, Anthony J., 4,143,174, Cl. 426-570.00Q.
Lundberg, Robert D.; and Makowski, Henry S., to Exxon Research &

Engineering Co. Fabrication of coatings from thermoplastic ionomers. 4,143,185, Cl. 427-314.000.

Lurie, Michael J., to RCA Corporation. Redundant hologram recording method employing temporal information signal. 4,142,772, Cl. 350-3.660.

Lushina, Olga T.: *See*—
Ostrovskaya, Vera M.; Lushina, Olga T.; Dziomko, Vladimir M.; and Davydovskaya, Julia A., 4,143,049, Cl. 260-308.00D.

Lutz, Alfons; Jardin, Hans; Bienert, Horst; and Kohlpaintner, Georg, to Webasto Werk W. Baier GmbH & Co. Vehicle roofs. 4,142,761, Cl. 296-137.00B.

Lux, Helmut: *See*—
Landwehr, Goetz; Lux, Helmut; and Duemmel, Karl-Heinz, 4,142,607, Cl. 181-259.000.

Luyckx, Leon, to Reactive Metals & Alloys Corporation. Steel ladle desulfurization compositions and methods of steel desulfurization. 4,142,887, Cl. 75-58.000.

Maag Gear-Wheel & Machine Company Limited: *See*—
Fivian, Daniel A., 4,142,333, Cl. 51-287.000.

Mace, Allen R., to Mace, Allen Ronald; and Mace, Isabelle Catholine. Body shower. 4,142,257, Cl. 4-152.000.

Mace, Allen Ronald: *See*—
Mace, Allen R., 4,142,257, Cl. 4-152.000.

Mace, Isabelle Catholine: *See*—
Mace, Allen R., 4,142,257, Cl. 4-152.000.

MacGregor International S.A.: *See*—
Kummerman, Henri, 4,142,640, Cl. 414-139.000.

MacIntyre, Robert M., to Signature Guardian Systems, Inc. Character recognition system. 4,143,355, Cl. 340-146.30C.

MacJannette, Barrie, to GSPK (Electronics) Limited. Blade sharpeners. 4,142,331, Cl. 51-102.000.

MacKenzie, Robert P., to Ampex Corporation. Digital chrominance separating and processing system and method. 4,143,396, Cl. 358-8.000.

Macpherson, Ian A.: *See*—
McCrae, James M.; Irvine, Alexander M.; Macpherson, Ian A.; and Cavalieri, Vincent J., 4,143,058, Cl. 260-438.100.

Maeda, Shinichi; and Oiwa, Katsuhiko, to Nippondenso Co., Ltd. Method for electrically calibrating the output of pressure transducers. 4,142,420, Cl. 73-728.000.

Magiera, Helmut: *See*—
Muller, Anton; and Magiera, Helmut, 4,142,808, Cl. 403-166.000.

Magnavox Company, The: *See*—
Bernhart, James I.; Nobles, James W.; and White, Ronald L., 4,143,360, Cl. 340-711.000.
Hunsinger, Bill J., 4,143,340, Cl. 333-151.000.

Magnetfabrik Bonn GmbH vorm. Gewerkschaft Windhorst: *See*—
Muller, Werner, 4,142,281, Cl. 29-116.00R.

Magovern, George J.; Shipko, Frederick J.; and Roland, George W., to Coratomic, Inc. Catheter. 4,142,531, Cl. 128-418.000.

Magyar, Don, Jr. Plant potting system. 4,142,324, Cl. 47-75.000.

Mahdjuri, Faramarz: *See*—
Hermann, Wilhelm; Horster, Horst; Schroder, Johann; and Mahdjuri, Faramarz, 4,142,509, Cl. 126-270.000.

Mahe, Armel: *See*—
Eyral, Max; and Mahe, Armel, 4,142,937, Cl. 176-87.000.

Maier, Martin: *See*—
Hellkuhl, Ludger; and Maier, Martin, 4,142,349, Cl. 56-14.400.

Maiffredy, Lionel; Peeters, Luc; and Theolier, Maurice, to Sodetal, Societe Pour le Developpement du Filmentallique. Manufacture of elongated bodies of high strength carbon steel. 4,142,919, Cl. 148-12.00R.

Main, Brian G.; and Barlow, Jeffrey J., to Imperial Chemical Industries Limited. Morpholine carboxamides and use thereof. 4,143,140, Cl. 424-248.540.

Maine Ideas Incorporated: *See*—
Pierson, Olof P., 4,142,263, Cl. 5-68.000.

Makowski, Henry S.: *See*—
Lundberg, Robert D.; and Makowski, Henry S., 4,143,185, Cl. 427-314.000.

Mallozzi, Philip J.; Epstein, Harold M.; Jung, Richard G.; Applebaum, David C.; Fairand, Barry P.; Gallagher, William J.; Uecker, Ronald L.; and Muckerheide, Myron C., to Battelle Memorial Institute. Applying radiation. 4,143,275, Cl. 250-503.000.

Maltby, Edgar W., to Eaton Corporation. Three port thermal vacuum valve with electrical switch. 4,142,675, Cl. 236-86.000.

Manaka, Nobuzi: *See*—
Asano, Masaharu; Fujishiro, Takeshi; Aono, Shigeo; Hosaka, Akio; Manaka, Nobuzi; and Ezoe, Mituhiko, 4,142,482, Cl. 123-32.0EE.

Manheimer, Wallace M.: *See*—
Sprangle, Phillip A.; Drobot, Adam T.; and Manheimer, Wallace M., 4,143,299, Cl. 315-5.410.

Mankowski, Aleksander: *See*—
Sidles, Peter, Jr.; and Mankowski, Aleksander, 4,142,615, Cl. 192-4.00A.

Mann, Arnold, to VDO Adolf Schindling AG. Apparatus for controlling the traveling speed of a motor vehicle. 4,142,602, Cl. 180-108.000.

Manring, William H.; DeBello, Patrick M.; and Imperato, Eugene G., to FMC Corporation. High sodium oxide composition useful in the manufacture of glass. 4,142,907, Cl. 106-52.000.

Mansfield, Stephen T.: *See*—
Gibson, Ian E.; and Mansfield, Stephen T., 4,143,305, Cl. 315-379.000.

Mantegani, Enzo, to Welko Industriale S.p.A. Hydraulic system for supplying hydraulic fluid to a hydraulically operated device alternately at pressures of different value. 4,142,368, Cl. 60-413.000.

Marchais, Michel: *See*—
Daviot, Jean; and Marchais, Michel, 4,142,908, Cl. 106-64.000.

Marchal, Alain M. E.: *See*—
Challine, Andre P. A.; Marchal, Alain M. E.; and Foglia, Vincent F. P., 4,142,819, Cl. 405-196.000.

Marcolina, Gene A.; and Holl, Gordon D. Animal trap and trapping method. 4,142,320, Cl. 43-61.000.

Marconi Company Limited, The: *See*—
Duckworth, George; and James, David R., 4,143,312, Cl. 318-649.000.
Gibson, Ian E.; and Mansfield, Stephen T., 4,143,305, Cl. 315-379.000.

Marconi Instruments Limited: *See*—
Cain, William D.; Hall, Denis G.; and Middleton, John D., 4,143,342, Cl. 333-33.000.

Margotte, Dieter: *See*—
Adelmann, Siegfried; Margotte, Dieter; Vernaleken, Hugo; and Nouvertne, Werner, 4,143,024, Cl. 260-31.2XA.

Mark, Victor; and Wilson, Phillip S., to General Electric Company. Plasticized polycarbonate composition. 4,143,023, Cl. 260-30.80R.

Marocco, Frank J.; and Bolanowski, Lelia A., to American Cyanamid Company. Direct dispensing suture package for a multiple of sterile surgical sutures with or without needles attached. 4,142,628, Cl. 206-63.300.

Marold, Thomas; and Feist, Wieland, to Jenoptik Jena G.m.b.H. Jena. Arrangement for measuring angles. 4,143,268, Cl. 250-231.0SE.

Mars Limited: *See*—
Buckley, Keith; and Barker, David, 4,143,171, Cl. 426-331.000.
Mitchell, John R.; Buckley, Keith; and Burrows, Ian E., 4,143,172, Cl. 426-532.000.

Marsden, Richard, to Lilly Industries Limited. Cephalexin tablets. 4,143,129, Cl. 424-80.000.

Marsh, Gerald J.; Reid, Kenneth H.; and Jarski, William C., to General Motors Corporation. Seat belt securing device. 4,142,737, Cl. 280-747.000.

Martin, Eugene R., to SWS Silicones Corporation. Silylated polymers. 4,143,089, Cl. 260-827.000.

Martin, Hans. Ski and skating boo.. 4,142,307, Cl. 36-50.000.

Martino, Joseph F., Jr.: *See*—
King, Gerard J.; and Martino, Joseph F., Jr., 4,142,925, Cl. 148-175.000.

Maruyama, Fumio: *See*—
Iwahara, Makoto; Maruyama, Fumio; Fujiki, Goro; Mori, Toshinori; Hiyama, Norio; and Kikuchi, Mitsuru, 4,143,244, Cl. 179-1.00G.

Maryland Environmental Service: *See*—
Tseng, Eugene; and Bassin, Morton, 4,143,202, Cl. 428-406.000.

Maschinen- und Werkzeugbau GmbH: *See*—
Nagel, Rudolf, 4,142,393, Cl. 72-181.000.

Maschinenfabrik Fahr Aktiengesellschaft Gottmadingen: *See*—
Hellkuhl, Ludger; and Maier, Martin, 4,142,349, Cl. 56-14.400.

Maschinenfabrik Peter Zimmer Aktiengeselischaft: *See*—
Schweitzer, Karl, 4,142,684, Cl. 239-585.000.

Mascia, Carmen T.; and Hasegawa, Gary K., to Continental Group, Inc., The. Flexible bag pump-type dispenser for mounting on cans. 4,142,653, Cl. 222-207.000.

Masi, Paolo: *See*—
Foglio, Maurizio; Franceschi, Giovanni; Masi, Paolo; and Suarato, Antonino, 4,143,037, Cl. 260-239.00A.

Maskasky, Joe E., to Eastman Kodak Company. Converted-halide photographic emulsions and elements having composite silver halide crystals. 4,142,900, Cl. 96-94.00R.

Massachusetts Bay Transportation Authority: *See*—
Sheehan, Edward P., 4,142,620, Cl. 194-78.000.

Massachusetts Institute of Technology: *See*—
Hsieh, Jaw J., 4,142,924, Cl. 148-171.000.
Sheehan, John C.; and Lo, Young S., 4,143,046, Cl. 260-306.70C.

Masse, Basil J.: *See*—
Diver, James J.; Heide, Henry A.; and Masse, Basil J., 4,142,624, Cl. 198-425.000.

Massey-Ferguson Services N.V.: *See*—
Bernini, Giancarlo, 4,142,733, Cl. 280-446.00A.
Woodward, John W.; and Ashton, Bruce H., 4,142,587, Cl. 172-47.000.

Masson, Bernard; Rabilloud, Guy; and Sillion, Bernard, to Institut Francais du Petrole. Diaryloxy-met-terphenyl derivatives, their manufacture and uses. 4,143,077, Cl. 568-636.000.

Masson, Pierre L.; and Heremans, Joseph F., to Technicon Instruments Corporation. Antigen-antibody analysis with solid phase RF and C1q. 4,143,124, Cl. 424-12.000.

Mast, Fred: *See*—
Ehrat, Kurt; Mast, Fred; Huber, Ernst; and Huber, Josef, 4,143,279, Cl. 250-556.000.

Masugi, Takashi: *See*—
Takaya, Takao; Masugi, Takashi; Takasugi, Hisashi; and Kochi, Hiromu, 4,143,166, Cl. 424-246.000.

Matner, Martin: *See*—
Sinn, Gustav; Matner, Martin; and Bross, Hermann J., 4,143,198, Cl. 428-290.000.

Matsuda, Mutsuhide: *See*—
Matsumoto, Seiichi; Yokota, Hideo; and Matsuda, Mutsuhide, 4,142,788, Cl. 354-53.000.

Matsumoto, Seiichi; Yokota, Hideo; and Matsuda, Mutsuhide, to Canon Kabushiki Kaisha. Power source switch for use in a camera circuit to detect a focused condition. 4,142,788, Cl. 354-53.000.

Matsumoto, Seiichi: *See*—
Suzuki, Ryoichi; Uchiyama, Takashi; Matsumoto, Seiichi; Amikura, Takashi; and Tsunekawa, Tokuichi, 4,142,786, Cl. 354-32.000.

Matsumoto, Takao, to Tomy Kogyo Co., Inc. Fluid filled amusement devices utilizing fluid motion. 4,142,715, Cl. 273-1.00L.

Matsunobu, Kenji: *See*—
Mizukami, Satoshi; Shoyama, Etsuhiko; Matsunobu, Kenji; Taniguchi, Masatosi; Konno, Kuniyoshi; and Kimura, Katunori, 4,143,290, Cl. 310-270.000.

Matsuo, Mototsugu: *See*—
Otomine, Kazuo; and Matsuo, Mototsugu, 4,142,929, Cl. 156-72.000.

Matsushita Electric Industrial Co., Ltd.: *See*—
Esaki, Hideya; Hirao, Takashi; and Kawakami, Hakuhei, 4,143,388, Cl. 357-23.000.
Itakura, Gen; and Iguchi, Takashi, 4,143,207, Cl. 428-539.000.
Koike, Susumu; and Kano, Gota, 4,143,286, Cl. 307-238.000.

Matsushita Electronics Corporation: *See*—
Hosokoshi, Kakuichiro; Nakamura, Hiroto; and Okamoto, Takami, 4,143,293, Cl. 313-409.000.

Matth. Hohner AG: *See*—
Ehler, Martin, 4,142,438, Cl. 84-360.000.

Matthews, Demetreos N.; and Nudenberg, Walter, to Uniroyal, Inc. Flame retarded polyurethane compositions. 4,143,029, Cl. 260-45.8NT.

Mattioli, Terrence W.; and Schieber, John R., to Betz Laboratories, Inc. Deposition test coupon. 4,142,402, Cl. 73-61.200.

Mauk, Gerhard: *See*—
Johannsen, Peter; Peter, Julius; and Mauk, Gerhard, 4,142,567, Cl. 152-353.00R.

Maurel, Raymond: *See*—
Barrault, Joel; Guisnet, Michel; Lucien, Jacques; and Maurel, Raymond, 4,143,052, Cl. 260-329.00R.

Maurer, Bruno, to Firmenich S.A. Perfume compositions containing tricyclic compounds. 4,142,997, Cl. 252-522.000.

Maxam, Allan M.: *See*—
Hahn, Terrance; and Maxam, Allan M., 4,142,960, Cl. 204-299.00R.

Maxfibe, Inc.: *See*—
Hutchison, Bruce R.; and Swanson, Arthur M., 4,143,163, Cl. 426-96.000.

Maxsted, Malcolm D., to Smith International, Inc. Two stage large diameter drill bit. 4,142,598, Cl. 175-344.000.

Maxsted, Malcolm D.: *See*—
Dixon, Robert L.; Maxsted, Malcolm D.; and Kellner, Jackson M., 4,142,593, Cl. 175-53.000.

May, Christian: *See*—
Stenzel, Jurgen; Heymer, Gero; and May, Christian, 4,143,121, Cl. 423-299.000.

Mayeaux, Donald P. Apparatus for producing a calibration sample for analytical instrumentation. 4,142,860, Cl. 137-557.000.

Mayerhoefer, Horst; and Wolf, Rainer, to Sandoz Ltd. 5,5-Bis(halomethyl)1,3,2-dioxaphosphorinane compounds. 4,143,101, Cl. 260-927.00R.

Mayfield, Windel O.; Montague, John M.; and Thomerson, Clarence T., to Regal Tool & Rubber Co., Inc. Removable closure apparatus for hollow columnar members. 4,142,371, Cl. 405-224.000.

McBride, Thomas R.: *See*—
Richey, Joseph B.; McBride, Thomas R.; and Covic, John, 4,143,273, Cl. 250-445.00T.

McCallum, John, to Electro-Chlor Corporation. Electrode assembly. 4,142,959, Cl. 204-286.000.

McCann, John; and Bagshaw, Trevor, to British Steel Corporation. Welding microstructure control. 4,143,258, Cl. 219-73.000.

McCardell, Peter D.: *See*—
Heckman, Paul J., Jr.; and McCardell, Peter D., 4,143,400, Cl. 358-95.000.

McCormack, Kent; and McNeill, Dane A., to Texas Instruments Incorporated. Ferroelectric imaging system. 4,143,269, Cl. 250-352.000.

McCorsley, Clarence C., III; and Varga, Julianna K., to Akzona Incorporated. Process for making a precursor of a solution of cellulose. 4,142,913, Cl. 106-186.000.

McCrae, James M.; Irvine, Alexander M.; Macpherson, Ian A.; and Cavalieri, Vincent J., to Ciba-Geigy Corporation. Process for production of an azomethine pigment. 4,143,058, Cl. 260-438.100.

McDermott, Roger D.: *See*—
Wagner, Eugene R.; and McDermott, Roger D., 4,143,151, Cl. 424-275.000.

McDonald, Dean T.: *See*—
Williams, Michael R.; and McDonald, Dean T., 4,142,550, Cl. 137-538.000.

McElhenny, Stuart W.: *See*—
Kuehn, Frederick J., Jr.; Laukaitis, Joseph A.; and McElhenny, Stuart W., 4,143,280, Cl. 290-9.000.

McEntire, Edward E.; and Speranza, George P., to Texaco Development Corp. High tertiary amine content compositions useful as polyurethane catalysts. 4,143,071, Cl. 260-561.00A.

McGinnis, Bernard W.; and Weidenhammer, James A., to International Business Machines Corp. External selector and internal controller for flexible disc stack. 4,143,408, Cl. 360-98.000.

McGowen, Lloyd E.; and Messick, Ernest E., to Tru-Flex Metal Hose Corporation. Clamping device. 4,142,743, Cl. 285-177.000.

McKillop, Donald C., Sr. Building heating system. 4,142,679, Cl. 237-54.000.

McLaughlin, Alexander; Reymore, Harold E., Jr.; and Richter, Reinhard H., to Upjohn Company, The. Novel compositions. 4,143,014, Cl. 260-29.2TN.

McLaughlin, James B.: *See*—
Wald, Gerald R.; Weaver, Daniel J.; Piccardo, Michael J.; McLaughlin, James B.; and Treiber, Robert, 4,143,417, Cl. 364-900.000.

McLennan, Harold M., to Pico Electronics Limited. Gramophone equipment. 4,142,729, Cl. 274-9.0RA.

McLeod, Francis; Silverstein, Spencer; and Kurtz, Robert, to Sutures Inc. Doppler flow meter and method. 4,142,412, Cl. 73-194.00A.

McNeil Corporation: *See*—
Smith, Thomas W.; and Bibbee, Jeffrey N., 4,143,114, Cl. 264-326.000.

McNeill, Dane A.: *See*—
McCormack, Kent; and McNeill, Dane A., 4,143,269, Cl. 250-352.000.

McQuate, William M.: *See*—
Lewicki, Walter J., Jr.; McQuate, William M.; and Ringer, Richard M., 4,142,849, Cl. 425-385.000.

Medtronic, Inc.: *See*—
Ware, Lyle A., 4,142,532, Cl. 128-419.00P.

Meiners, Hans-Joachim: *See*—
Haas, Peter; Blahak, Johannes; Meiners, Hans-Joachim; and Mormann, Werner, 4,143,003, Cl. 521-129.000.

Meltzer, Robert J., to American Optical Corporation. Contact lens sterilizing apparatus. 4,143,116, Cl. 422-116.000.

Melzer, Arnfried: *See*—
Frank, Karl; and Melzer, Arnfried, 4,142,895, Cl. 96-66.400.

Menard, Christian, to Thomson-CSF. Electronic arrangement for controlling the ignition of an internal combustion engine. 4,142,489, Cl. 123-117.00R.

Mendelsohn, Marshall H.: *See*—
Gruen, Dieter M.; Mendelsohn, Marshall H.; and Dwight, Austin E., 4,142,300, Cl. 34-15.000.

Mendenhall, Robert L. Recycled asphalt-aggregate process and apparatus. 4,142,803, Cl. 366-25.000.

Merck & Co., Inc.: *See*—
Saari, Walfred S., 4,143,146, Cl. 424-266.000.

Messerschmitt-Bolkow-Blohm: *See*—
Knopf, Alois, 4,143,375, Cl. 343-18.00E.

Messick, Ernest E.: *See*—
McGowen, Lloyd E.; and Messick, Ernest E., 4,142,743, Cl. 285-177.000

Mezhdo, Murad S.: *See*—
Kazanovich, Boleslav B.; Santurian, Germes R.; Fischenko, Petr A.; Potapenko, Iosif A.; Budnyatsky, David M.; Akopdzhanian, Felix K.; Oganesian, Tsolak R.; Kazarian, Edvard S.; Dzhanbaev, Salikh I.; Seryapov, Alexandr I.; Shakhnazarian, Albert T.; Mezhdo, Murad S.; Bachilo, Leverie L.; Bushmin, Anatoly P.; Gershman, Mikhail B.; Samokhvalov, Anatoly I.; and Oganesian, Georgy S., 4,142,579, Cl. 165-84.000.

Michaels, Alan S.: *See*—
Zaffaroni, Alejandro; Michaels, Alan S.; and Theeuwes, Felix, 4,142,526, Cl. 128-260.000.

Michel, Christian G.: *See*—
Arzoumanidis, Gregory G.; Gold, Richard F.; and Michel, Christian G., 4,142,991, Cl. 252-429.00B.

Michel, Walter: *See*—
Honel, Hans; Keller, Karlfried; Michel, Walter; and Schon, Manfred, 4,143,016, Cl. 260-29.40R.

Michelson, Anatol, to Ashland Oil, Inc. Rotary type core making machine. 4.142.573. Cl. 164-169.000.

Michon, Maurice; and Girard, Genevieve, to Compagnie Generale d'Electricite S.A. Wave-length selective cut-out device. 4,143,332, Cl. 330-4.300.

Mickelson, Roger D., to FMC Corporation. Multiple speed hoisting system with pressure protection and load control. 4,142,369, Cl. 60-425.000.

Middleton, John D.: *See*—
Cain, William D.; Hall, Denis G.; and Middleton, John D., 4,143,342, Cl. 333-33.000.

Midland-Ross Corporation: *See*—
Hemsath, Klaus H.; and Vereecke, Frank J., 4,142,712, Cl. 266-44.000.

Midland Steel Products Co.: *See*—
Satava, George L., 4,142,923, Cl. 148-131.000.

Mielke, Ingolf: *See*—
Klippert, Heinz; Mielke, Ingolf; and Plewan, Otto, 4,143,224, Cl. 526-200.000.

Mifago AG: *See*—
Giessler, Willi, 4,142,709, Cl. 254-168.000.

Mignien, Georges: *See*—
Gauthier, Francis; and Mignien, Georges, 4,142,777, Cl. 350-96.210.

Mihaljevic, Miroslav. Spoon-type fishing lure with offset tail. 4,142,319, Cl. 43-42.390.

Mihara, Hironobu: *See*—
Obinata, Tatsuichi; Wada, Kaname; Ogibayashi, Shigeaki; and Mihara, Hironobu, 4,143,211, Cl. 428-650.000.

Mijovic, Miroslav V.: *See*—
Baigrie, Brian D.; Bailey, Joseph; Johnston, Linda G.; and Mijovic, Miroslav V., 4,142,891, Cl. 96-29.00D.

Mikami, Takeshi: *See*—
Hori, Kiyotaka; Mikami, Takeshi; Miyazako, Takushi; and Naito, Kenji, 4,142,894, Cl. 96-63.000.

Mikoalj, Paul G.: *See*—
Nebeker, Eugene B.; Rodriguez, Sergio E.; and Mikoalj, Paul G., 4,142,972, Cl. 210-84.000.
Miles, Malcolm G.: *See*—
Johnson, Gregory R.; Miles, Malcolm G.; Salyer, Ival O.; and Hardy, Edgar E., 4,143,234, Cl. 136-89.0PC.
Miller, C. B. Means of construction of concrete culverts. 4,142,705, Cl. 249-188.000.
Miller, Donald M., to United States of America, Energy. Tool calibration system for micromachining system. 4,142,296, Cl. 33-181.00R.
Miller, Frederick C.: *See*—
Joo', Louis A.; and Miller, Frederick C., 4,143,217, Cl. 429-218.000.
Miller, George A.; Chan, Hak-Foon; and Carley, Harold E., to Rohm and Haas Company. Substituted arylcyanoalkyl and diarylcyanoalkylimidazole metal salt complexes and fungicidal compositions and methods utilizing them. 4,143,137, Cl. 424-245.000.
Miller, Philip C.; and Retsky, Michael W., to Zenith Radio Corporation. Getter support means for television cathode ray tubes. 4,143,294, Cl. 313-481.000.
Miller, Roger L.: *See*—
Bean, Lloyd F.; and Miller, Roger L., 4,142,981, Cl. 252-62.10P.
Miller, Stephen H.: *See*—
Covington, Roger G.; and Miller, Stephen H., 4,142,863, Cl. 422-63.000.
Minami, Syuji: *See*—
Toyota, Akinori; Minami, Syuji; and Kashiwa, Norio, 4,143,223, Cl. 526-125.000.
Mine Safety Appliances Company: *See*—
Burke, Aaron R.; Hough, William V.; and Hefferan, Gerald T., 4,142,902, Cl. 106-1.230.
Miner, Earl L., to Detroit Tool & Engineering Co. Tines construction. 4,142,586, Cl. 172-42.000.
Minesi, Didier: *See*—
Deplante, Michel; and Minesi, Didier, 4,143,308, Cl. 318-138.000.
Minnesota Mining and Manufacturing Company: *See*—
Schilling, Robert J., 4,142,793, Cl. 355-58.000.
Minolta Camera Kabushiki Kaisha: *See*—
Tanaka, Susumu; Sugiyama, Takashi; Seino, Kuniki; and Kondo, Shoji, 4,142,889, Cl. 96-1.00R.
Ueda, Hiroshi; and Yoshizaki, Akira, 4,142,787, Cl. 354-38.000.
Minoza, Clemente. Vaporific carburetor. 4,142,481, Cl. 123-25.00B.
Misunas, David P.: *See*—
Jacobsen, Robert G.; Warner, Thomas H.; and Misunas, David P., 4,143,333, Cl. 330-149.000.
Mitchell, David C. Concrete slab striker. 4,142,815, Cl. 404-103.000.
Mitchell, John D.: *See*—
Jordan, Bertram L.; and Mitchell, John D., 4,142,348, Cl. 56-10.200.
Mitchell, John R.; Buckley, Keith; and Burrows, Ian E., to Mars Limited. Food binding agent. 4,143,172, Cl. 426-532.000.
Mitchell, Norris W., to Phillips Petroleum Company. Pipeline buffer hydrocarbon from catalytic cracker effluent. 4,142,542, Cl. 137-1.000.
Mitsubishi Chemical Industries Limited: *See*—
Oohama, Tadashi; Yamaguchi, Ryozo; and Sugano, Mamoru, 4,143,040, Cl. 260-239.55C.
Mitsubishi Denki Kabushiki Kaisha: *See*—
Tachino, Kenzo, 4,142,609, Cl. 187-29.00R.
Tsuiki, Takehiko; Onishi, Ken; Ishida, Yoshinobu; and Chiba, Kazuhiro, 4,143,406, Cl. 360-48.000.
Mitsubishi Jukogyo Kabushiki Kaisha: *See*—
Tsushima, Ken; and Takahashi, Hisashi, 4,142,828, Cl. 415-201.000.
Mitsuhashi, Yasuo: *See*—
Yamakami, Hiroshi; Mitsuhashi, Yasuo; Tomari, Seiji; and Tsuchiya, Kaichi, 4,142,982, Cl. 252-62.10P.
Mitsui Petrochemical Industries Ltd.: *See*—
Toyota, Akinori; Minami, Syuji; and Kashiwa, Norio, 4,143,223, Cl. 526-125.000.
Mitsui, Yoshihiro; and Shimodaira, Tadayoshi, to Shinshu Seiki Kabushiki Kaisha and Kabushiki Kaisha Suwa Seikosha. Print character selection mechanism. 4,142,463, Cl. 101-99.000.
Miura, Kazuchika, to Teijin Limited. Device for detecting a running yarn tension. 4,142,409, Cl. 73-144.000.
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Moore, Robert E., to Suntech, Inc. Novel process for production of perfluoro p-methane from pinene. 4,143,079, Cl. 260-648.00F.
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Morozumi, Mituharu; Arai, Masataka; and Iseki, Shigeru, to Asahi Glass Company Ltd. Method of agglomerating polytetrafluoroethylene powder. 4,143,110, Cl. 264-117.000.
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Ulmer, Richard W., 4,143,362, Cl. 340-347.0NT.
Mott, George C., to Mult-A-Frame Corporation. Panel construction for elevated floor systems. 4,142,341, Cl. 52-263.000.
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Mueller, Anthony A., to Actus, Inc. Automatic sample changer having planar transport surface. 4,142,706, Cl. 250-328.000.
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Muller, Anton; and Magiera, Helmut, to Eisen- und Drahtwert Erlau Aktiengesellschaft. Tire chain tensioning device. 4,142,808, Cl. 403-166.000.
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Murphy, Alan P., to Procter & Gamble Company, The. Fabric treating compositions with modified phase properties. 4,142,978, Cl. 252-8.700.
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Murray Corporation: *See*—
Kish, Arthur S., 4,142,843, Cl. 417-313.000.
Murray, Robert L., to Dover Corporation. Automatic shut-off nozzle having unique valve. 4,142,562, Cl. 141-206.000.
Murray, Ronald A., to TRW Inc. Compressor mount clips. 4,142,704, Cl. 248-680.000.
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Musgrave, Daniel D. Magazine status indicators. 4,142,313, Cl. 42-1.00B.
Mustoe, Robert M.; and Zajonc, Fred H., to United States Gypsum Company. Pallet having reinforced gypsum structural members. 4,142,471, Cl. 108-57.100.
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Myers, Jimmy D., to Caterpillar Tractor Co. Counterweight assembly for earth-working equipment. 4,142,642, Cl. 414-719.000.
Mylroie, Steve W., to Signetics Corporation. Composite JFET-bipolar structure. 4,143,392, Cl. 357-43.000.
Naarmann, Herbert; Penzien, Klaus; and Schulte, Wolfgang, to BASF Aktiengesellschaft. Manufacture of brominated polymerization products of styrene. 4,143,221, Cl. 526-44.000.
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Nagasawa, Shigeru, to Tokyo Shibaura Electric Co., Ltd. Detector circuit. 4,143,330, Cl. 329-101.000.
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Watson, William R., 4,142,590, Cl. 172-755.000.
Nally, Robert B., to NCR Canada Ltd - NCR Canada Ltee. Character recognition apparatus. 4,143,356, Cl. 340-146.30C.
Narasimhan, Mandayam C., to Allied Chemical Corporation. Continuous casting method for metallic strips. 4,142,571, Cl. 164-88.000.
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Page, Ronald W., 4,143,331, Cl. 330-2.000.
Nauta, Jelle G. Wet-dry vacuum cleaner baffle strainer system. 4,142,270, Cl. 15-353.000.
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Nelson, Norman A., to Upjohn Company, The. 4-Hydroxy-3(2'-hydroxyacetyl)-6-oxohexanoic acid derivatives. 4,143,053, Cl. 260-343.600.
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Nishikawa, Toshio; Ishikawa, Youhei; and Tamura, Sadahiro, to Murata Manufacturing Co., Ltd. Microwave band-pass filter provided with dielectric resonator. 4,143,344, Cl. 333-202.000.
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Ayers, Herman W., 4,143,369, Cl. 343-6.50R.
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Brandtjen, Sheldon J., 4,142,308, Cl. 37-103.000.
Nottingham, Ralph B., to Novatronics, Inc. Guidance devices. 4,142,696, Cl. 244-3.160.
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Hall, John B.; Wiegers, Wilhelmus J.; Hill, Ira D.; Novak, Robert M.; and Schmitt, Frederick L., 4,142,998, Cl. 252-522.000.
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Nudenberg, Walter: *See*—
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Bellinga, Hendrik, 4,142,413, Cl. 73-198.000.
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Brusselmans, Jacques, 4,142,592, Cl. 174-92.000.
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Offik, Anna W. Method of making square knot macrame. 4,142,745, Cl. 289-1.500.
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Kazanovich, Boleslav B.; Santurian, Germes R.; Fischenko, Petr A.; Potapenko, Iosif A.; Budnyatsky, David M.; Akopdzhanian, Felix K.; Oganesian, Tsolak R.; Kazarian, Edvard S.; Dzhanbaev, Salikh I.; Seryapov, Alexandr I.; Shakhnazarian, Albert T.; Mezhdo, Murad S.; Bachilo, Leverie L.; Bushmin, Anatoly P.; Gershman, Mikhail B.; Samokhvalov, Anatoly I.; and Oganesian, Georgy S., 4,142,579, Cl. 165-84.000.
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Ogata, Yasuhiro; and Ariyasu, Kenji, to Fuji Photo Film Co., Ltd. Method for pressure measurement. 4,142,404, Cl. 73-762.000.
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Oguro, Tomokatsu, to Hitachi, Ltd. Cathode structure for an electron tube. 4,143,295, Cl. 313-346.00R.
Ohio-Nuclear, Inc.: *See—*
Richey, Joseph B.; McBride, Thomas R.; and Covic, John, 4,143,273, Cl. 250-445.00T.
Ohnishi, Akihiro: *See—*
Saito, Masaaki; and Ohnishi, Akihiro, 4,142,496, Cl. 123-119.00A.
Ohnishi, Masahiro, to Fuji Photo Film Co., Ltd. Light beam scanning system. 4,143,403, Cl. 358-206.000.
Ohyama, Yoshishige: *See—*
Kuroiwa, Hiroshi; Ohyama, Yoshishige; Nishimura, Yutaka; and Miyakawa, Nobuaki, 4,142,407, Cl. 73-118.000.
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Okuda, Toru, to Tadano Ltd. Automatic extension control system for jacking device. 4,142,710, Cl. 254-86.00H.
Okuhara, Masakuni: *See—*
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Olin Corporation: *See—*
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Ward, William J.; and Gasper, Kenneth E., 4,143,115, Cl. 422-113.000.
Oliver, Norman J., to Sioux Steel Company. Mobile auger elevator with a flanged auger tube. 4,142,621, Cl. 198-318.000.
Olsaker, Oleif, to Sullair Corporation. Rotor bearing assembly for rotary gas machine. 4,142,765, Cl. 308-207.00R.
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Ackerfeldt, Bo I.; Olsson, Curt; and Crafoord, Carl-Goran, 4,142,736, Cl. 280-652.000.
Olszewski, Anthony R.; and Parnell, Donald R., to Corning Glass Works. Molding hydrosilicate materials. 4,142,878, Cl. 65-18.000.
Olympus Optical Company Limited: *See—*
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Omura, Keiji: *See—*
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Oohama, Tadashi; Yamaguchi, Ryozo; and Sugano, Mamoru, to Mitsubishi Chemical Industries Limited. Process for producing 17-acetals of 3-alkoxyestra-2,5 (10)-dien-17-ones. 4,143,040, Cl. 260-239.55C.
Ooyama, Mitsuhiro: *See—*
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Oppel, Werner, to Klockner Ionon GmbH. Method and arrangement for heating workpieces to desired temperatures. 4,142,957, Cl. 204-164.000.
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Orcutt, Allen R. Control for rotating arm irrigation system. 4,142,548, Cl. 137-344.000.
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Osberghaus, Rainer; Lorenz, Peter; Gloxhuber, Christian; and Braig, Siegfried, to Henkel Kommanditgesellschaft auf Aktien. Process for moisturing the skin. 4,143,160, Cl. 424-365.000.
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Ostrovskaya, Vera M.; Lushina, Olga T.; Dziomko, Vladimir M.; and Davydovskaya, Julia A. Method for preparing 2H-tetrazolium chloride and 2H-tetrazolium chloride hydrochloride. 4,143,049, Cl. 260-308.00D.
Oswald, Robert A.; and Kilet, Charlie R. High resolution timing recording system. 4,142,680, Cl. 235-92.0TA.
Otis Engineering Corporation: *See—*
Johnston, Russell A., 4,142,597, Cl. 175-304.000.
Otomine, Kazuo; and Matsuo, Mototsugu. Process for manufacturing transfer sheets. 4,142,929, Cl. 156-72.000.
Otremba, Robert R.: *See—*
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Workman, Gerald B., 4,143,006, Cl. 260-17.4ST.
Owens-Illinois, Inc.: *See—*
Jones, Millard L., Jr., 4,142,884, Cl. 65-356.000.
Porter, Harold, Jr., 4,142,345, Cl. 53-54.000.
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White, Paul L., 4,143,180, Cl. 427-145.000.
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Yashiro, Kuniji; Saida, Shigeki; and Sano, Yoshihide, 4,142,917, Cl. 148-6.160.

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Paal, Gabor, to International Business Machines Corporation. Method of reducing the defect density in a positive-working photoresist layer using a salt of imidazolinium. 4,142,892, Cl. 96-36.000.

Packer, Marvin, to RCA Corporation. Extrudable, non-flowing and non-aqueous solvent soluble hold down compound for printed wiring board assembly. 4,143,005, Cl. 260-17.00R.

Paganini, Bruno J.: *See—*
Baver, Donald W.; Granzow, Robert H.; Horst, William R.; and Paganini, Bruno J., 4,143,357, Cl. 340-146.3SY.

Page, Ronald W., to National Semiconductor Corporation. Summing amplifier for developing a squelch and meter voltage in a radio receiver. 4,143,331, Cl. 330-2.000.

Paget, Pierre C., to Essilor International (Compagnie Generale d'Optique), a French Societe Anonyme. Automatic level. 4,142,800, Cl. 356-250.000.

Paig, Robert M. Re-keying locking kit and method thereof. 4,142,391, Cl. 70-461.000.

Palmaer, Tore G. Method of providing a moisture-proof or moisture-resistant foundation insulation for buildings. 4,142,344, Cl. 52-742.000.

Panametrics, Inc.: *See—*
Kovac, Michael G.; Chleck, David J.; and Goodman, Philip, 4,143,177, Cl. 427-79.000.

Panek, Peter; Woditsch, Peter; Ritter, Wolfgang; and Tacke, Peter, to Bayer Aktiengesellschaft. Pigmented ABS polymer and polyamides. 4,143,026, Cl. 260-42.140.

Panoch, Hans-Joachim: *See—*
Feldmann, Rainer; Panoch, Hans-Joachim; Scholten, Heinz; and Feinauer, Roland, 4,143,025, Cl. 260-33.40R.

Paolinelli, Antonio: *See—*
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Parker-Hannifin Corporation: *See—*
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Washkewicz, Donald E.; and Busdiecker, Wayne S., 4,142,554, Cl. 138-109.000.

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Patrick, Henry W.: *See—*
Neeb, Robert P.; Patrick, Henry W.; and Mumford, Ray H., 4,142,790, Cl. 354-318.000.

Patterson, Williams G. Turbomolecular pump drive method and apparatus. 4,143,309, Cl. 318-807.000.

Paulus, Philippe; and Economopoulos, Marios, to Centre de Recherche Metallurgiques-Centrum voor Research in de Metallurgie. Production of galvanized steel strip. 4,143,184, Cl. 427-300.000.

Peake, Clinton J.; Harnish, Wayne N.; and Davidson, Bruce L., to FMC Corporation. 3-Chloro-5-(optionally substituted heterocycloxy)-4H-1,2,6-thiadiazin-4-one antifungal agents. 4,143,138, Cl. 424-246.000.

Peczeli, Charles F.; and Last, Anthony J., to Ontario Research Foundation. Fluid shear emulsifier. 4,142,806, Cl. 366-341.000.

Pedersen, S. Erik; and Sheng, Ming N., to Atlantic Richfield Company. Maleic anhydride production using thallium-vanadium modified phosphotungstic catalysts. 4,143,056, Cl. 260-346.750.

Pedgonay, John S. Turner-transducer system. 4,142,410, Cl. 73-147.000.

Peeters, Luc: *See—*
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Pellizzon, Tullio; Piccolo, Luigi; and Paolinelli, Antonio, to EUTECO S.p.A. Process for the preparation of yellow iron hydroxide pigment. 4,142,915, Cl. 106-304.000.

Penzien, Klaus: *See—*
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Perkins, Paul R.; and Bale, Christopher R., to Imperial Group Limited. Smoking product. 4,142,535, Cl. 131-17.0AC.

Perlin, Fred: *See—*
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Perry, Eli, to Monsanto Company. Membrane separation of water from aqueous mixtures. 4,142,966, Cl. 210-22.00R.

Perry, Elijah R.; and Rabinowitz, Mario, to Electric Power Research Institute, Inc. Heat pump system with improved heat transfer. 4,142,576, Cl. 165-45.000.

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Hicks, Leon E.; Peterson, Wayne A.; and Schexnayder, Lawrence F., 4,142,842, Cl. 417-288.000.

Petersson, Bengt O., to Aktiebolaget Svensk Rubber. Sealing device for liquid receptacles. 4,142,659, Cl. 222-514.000.

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Leeming, Michael R. G.; and Stubbs, John K., 4,143,147, Cl. 424-270.000.

Pfleger, Albert. Plastics boat hull. 4,142,265, Cl. 9-6.00P.

Pflieger, Bernard; and Reiniche, Andre, to Compagnie Generale des Etablissements Michelin. Process of manufacturing a steel strip by rolling, and strip obtained by said process. 4,142,920, Cl. 148-12.00B.

Philagro S.A.: *See—*
Abblard, Jean; Ghazarian, Michel; and Viricel, Rene, 4,143,059, Cl. 260-448.00R.

Phillips, Bobby M., to Eastman Kodak Company. Non-kneeing spinning orifices for spinnerets. 4,142,850, Cl. 425-461.000.

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Phillips, Peter J.; and Uyeda, Tim M., to Gartner, Klaus W. Tumbler wheels for combination locks. 4,142,388, Cl. 70-316.000.

Phillips Petroleum Company: *See—*
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Carle, Robert A.; and Hann, Paul D., 4,143,086, Cl. 260-683.0PD.
Doss, Richard C.; and Williams, Ralph P., 4,143,000, Cl. 528-123.000.
Mitchell, Norris W., 4,142,542, Cl. 137-1.000.
Rees, Robert L., 4,143,193, Cl. 428-35.000.
Zahn, Carl W.; and Clayton, Hadwen A., 4,142,876, Cl. 62-37.000.

Phipps, Jack R.: *See—*
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Piccardo, Michael J.: *See—*
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Piccolo, Luigi: *See—*
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Pickwell, Robert J.: *See—*
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Pico Electronics Limited: *See—*
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Pierburgh GmbH & Co. KG: *See—*
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Pierson, Olof P., to Maine Ideas Incorporated. Bed-mattress elevating system and the like. 4,142,263, Cl. 5-68.000.

Pignocco, Arthur J.; and Kachik, Robert H., to United States Steel Corporation. Refractory lining tuyere for metallurgical furnace. 4,142,556, Cl. 138-146.000.

Pilgrim, James F.; and Hunter, Ronald A., to Du Pont of Canada Limited. Process for coating sheet substrates with thermoplastic polymer. 4,143,187, Cl. 427-358.000.

Pillsbury Company, The: *See—*
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Pioneer Educational Society, The: *See—*
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Pioneer Manufacturing, Inc.: *See—*
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Pittman, Robert B.; and Offerman, Michael, to Industrial Electronic Hardware. Connector block. 4,142,768, Cl. 339-19.000.

Planke, Tore. Apparatus for sorting containers for liquids. 4,142,636, Cl. 209-524.000.

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Platt, Norman E., to Warner-Lambert Company. Aerosol metering. 4,142,652, Cl. 222-189.000.

Plessey Handel und Investments AG: *See—*
Goble, Arthur R.; and Webb, Michael H. J., 4,143,303, Cl. 315-239.000.
Plewan, Otto: *See—*
Klippert, Heinz; Mielke, Ingolf; and Plewan, Otto, 4,143,224, Cl. 526-200.000.
Plewes, John T., to Bell Telephone Laboratories, Incorporated. Method for making fine-grained Cu-Ni-Sn alloys. 4,142,918, Cl. 148-11.50C.
Plunkett, Hermon L., Sr. Insulating device for fluid conduit. 4,142,565, Cl. 150-52.00R.
Podgor, Albert L.: *See—*
Groselak, Robert E.; and Podgor, Albert L., 4,142,310, Cl. 40-21.00R.
Pogue, James L.; and Kutzler, John M., to Outboard Marine Corporation. Multiple range peak reading voltmeter. 4,143,317, Cl. 324-103.00P.
Polaroid Corporation: *See—*
Choinski, Edward J., 4,143,190, Cl. 427-420.000.
Polgreen, Geoffrey R., to British Steel Corporation. Magnetic suspension system for railway vehicle with lifting force control. 4,142,469, Cl. 104-148.0MS.
Pollak, Fred H.; and Raccah, Paul M., to Yeshiva University. Method and apparatus for measuring variations in composition in binary and ternary semiconductors utilizing electrolyte electroreflectance. 4,142,802, Cl. 356-319.000.
Pomeroy, Seth: *See—*
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Pommer, Ernst-Heinrich; Reuther, Wolfgang; Raff, Paul; and Goettsche, Reimer, to BASF Aktiengesellschaft. Fungicide for wood preservation employing complexed heavy metal salts of N-nitroso-N-cyclohexylhydroxylamine. 4,143,153, Cl. 424-289.000.
Porter, Harold, Jr., to Owens-Illinois, Inc. Nestable container packaging apparatus. 4,142,345, Cl. 53-54.000.
Porter, Samuel, Jr.: *See—*
Chang, Wen-Hsuan; Erikson, J. Alden; and Porter, Samuel, Jr., 4,143,091, Cl. 260-859.00R.
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Stoddart, Alan G., 4,143,354, Cl. 340-146.10E.
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Poston, William B., to Poston, Sara G. Yarn guide for spinning or twisting machine. 4,142,357, Cl. 57-122.000.
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Potts, Luken: *See—*
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Potwin, David R., to Heil Co., The. Adjustable arm for shredder hammer. 4,142,687, Cl. 241-194.000.
Powers, Boyd E. Portable dock. 4,142,477, Cl. 114-263.000.
Pozar, Cleve F. Pickup assembly for stringed instrument. 4,142,435, Cl. 84-1.150.
PPG Industries, Inc.: *See—*
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Imler, Vaughn R., 4,142,882, Cl. 65-114.000.
Pradon, Jacques, to ERMI. Conveyor for cylindrical containers. 4,142,623, Cl. 198-410.000.
Primus, David R. Multiple bin heat recycled grain drying. 4,142,302, Cl. 34-31.000.
Princeton Applied Research Corporation: *See—*
Smith, John L., 4,142,944, Cl. 204-1.00T.
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Williams, Don W., 4,143,289, Cl. 310-156.000.
Psaar, Hubertus; and Kruckenberg, Winfried, to Bayer Aktiengesellschaft. Pyrazolinyl indolium dyestuffs. 4,143,228, Cl. 548-379.000.
Pullman Incorporated: *See—*
Saffrahn, Fred C., 4,142,328, Cl. 49-220.000.
Varda, Eugene I., 4,142,751, Cl. 292-217.000.
Quaas, Dietmar G., to Buhrke Industries, Inc. Quick-change system for progressive die tooling. 4,142,398, Cl. 72-481.000.
Quaglia, Giuseppe: *See—*
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Quaker Oats Company, The: *See—*
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Raab, Karlheinz; Wolff, Konrad; Koch, Heinrich; and Hagel, Paul, to Zimmer Aktiengesellschaft. Apparatus and method for reclaiming polymer waste. 4,143,001, Cl. 260-2.300.
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Radlmann, Eduard; Reinehr, Ulrich; and Nischk, Gunther, to Bayer Aktiengesellschaft. Synthetic filaments and fibres with high moisture absorption and water retention capacity. 4,143,200, Cl. 428-373.000.
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Raghavachari, Srinivas T.; and Striebel, Robert L., II, to MPL, Inc. Packaging system for syringe dispensers. 4,142,633, Cl. 206-366.000.
Rak, Jaromir R., to Canadian Patents and Development Limited. High retention wood preservative composition. 4,143,010, Cl. 260-23.00S.
Ralston Purina Company: *See—*
Skoch, Leroy V.; and Sewell, Raymond F., 4,143,169, Cl. 426-307.000.
Ramaswamy, Vellayan; and Standley, Robert D., to Bell Telephone Laboratories, Incorporated. Optical signal processing devices. 4,142,775, Cl. 350-96.140.
Rankin, Marvin L., Jr. Bait casting fishing reel. 4,142,694, Cl. 242-211.000.
Ranney, Maurice W.: *See—*
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Rapp, Charles F., to Owens-Illinois, Inc. Glasses suitable for laser application. 4,142,986, Cl. 252-301.40P.
Rasmussen, Ole-Bendt. Method of manufacturing a laminated fibro-filamentary or film structure which is partly delaminated and products produced by said method. 4,143,195, Cl. 428-116.000.
Rauch, Georg. Screen printing and stencil articles, apparatus and methods. 4,142,464, Cl. 101-128.300.
Raytheon Company: *See—*
Adlerstein, Michael G.; and Sprague, Robert L., 4,142,893, Cl. 96-36.200.
Kim, Chung K.; and Wheeler, Alfred J., 4,143,384, Cl. 357-15.000.
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Barkow, William H., 4,143,345, Cl. 335-212.000.
Beelitz, Howard R., 4,143,359, Cl. 340-166.00R.
Berard, Clement A., Jr.; and Kinsley, Jonathan S., 4,143,282, Cl. 307-43.000.
Harwood, Leopold A.; and Wittmann, Erwin J., 4,143,398, Cl. 358-34.000.
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Lewis, Henry G., Jr., 4,143,366, Cl. 340-347.0AD.
Lurie, Michael J., 4,142,772, Cl. 350-3.660.
Packer, Marvin, 4,143,005, Cl. 260-17.00R.
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Recognition Equipment Incorporated: *See—*
Neff, Marion W., 4,143,358, Cl. 340-146.3AG.
Rees, Richard W. A.: *See—*
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Rees, Robert L., to Phillips Petroleum Company. Molded container. 4,143,193, Cl. 428-35.000.
Regal Tool & Rubber Co., Inc.: *See—*
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Reinehr, Ulrich: *See—*
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Research Corporation: *See—*
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Riazuelo, Serge, to ABG-SEMCA S.A. Apparatus for measuring axial thrust of a rotating machine shaft. 4,142,408, Cl. 73-140.000.

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Bauer, Wolfgang; and Ribka, Joachim, 4,143,033, Cl. 260-155.000.

Ricci, Aldo; and Passerini, Nedo, to Saint-Gobain Industries. Apparatus for gas treatment of articles traversing an enclosure. 4,142,304, Cl. 34-105.000.

Rich, Joseph W.; Bergman, Richard C.; and Treanor, Charles E., to Calspan Corporation. Method for the initiation of chemical reactions by low pressure optical pumping. 4,142,955, Cl. 204-157.10R.

Richardson Company, The: *See—*
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Richey, Joseph B.; McBride, Thomas R.; and Covic, John, to Ohio-Nuclear, Inc. Variable collimator. 4,143,273, Cl. 250-445.00T.

Richter, Reinhard H.: *See—*
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Ricoh Company, Ltd.: *See—*
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Riddel, John W., to General Motors Corporation. Servo motor with differential pressure controlled and actuated release valve. 4,142,612, Cl. 192-3.00G.

Rief, George A. Target with digital recorder. 4,142,723, Cl. 273-102.20R.

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Rigopulos, Peter N.; Desaulniers, Charles W.; and Doucette, David E., to Amicon Corporation. Particulate support material. 4,143,203, Cl. 428-407.000.

Riker Laboratories, Inc.: *See—*
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Ritter, Wolfgang: *See—*
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Roberts, Thomas E. Architectural lighting apparatus. 4,143,411, Cl. 362-145.000.

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Rockwell International Corporation: *See—*
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Rodriguez, Sergio E.: *See—*
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Roethke, Alfred A. K., to Ameco Corporation. Coil winder. 4,142,289, Cl. 29-736.000.

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Rohm and Haas Company: *See—*
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Roland Corporation: *See—*
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Romano, John V.; and Hector, Roger D., to Atari, Inc. Seat mounted simulated weapon and target shooting game. 4,142,722, Cl. 273-101.100.

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Roscoe, Lee S. Multi-function and multi-style garment and method of making the same. 4,142,253, Cl. 2-74.000.

Rosen, Perry, to Hoffmann-La Roche Inc. Process for substituted 5-benzyl-2,4-diamino-pyrimidines. 4,143,227, Cl. 544-325.000.

Rosenbaum, Walter J., II, to Inland Container Corporation. Lock bottom carton. 4,142,666, Cl. 229-39.00R.

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Ross, Edgar A.; and Tatum, Odes D., to Southern Weaving Company. Controlled impedance cable. 4,143,236, Cl. 174-32.000.

Rossy, Phillip A.; Hoffmann, Werner; and Mueller, Norbert, to BASF Aktiengesellschaft. Manufacture of 3-halosulfonylthiophene-carboxylic acid compounds. 4,143,050, Cl. 260-332.20C.

Rosynsky, Victor; and Stawsky, Alfred, to Engelhard Minerals & Chemicals Corporation. Catalytic apparatus. 4,142,864, Cl. 422-179.000.

Rothgery, Eugene F.; and Schroeder, Hans Juergen A., to Olin Corporation. Process for making selected 3-trihalomethyl-5-lower alkoxy-1,2,4-thiadiazoles. 4,143,044, Cl. 260-302.00D.

Rouam, Jean S. R., to Societe d'Etudes de Machines Thermiques S.E.M.T. Method for magnetically determining the degree of wear of a piston ring of an internal combustion engine while reciprocating thereon. 4,143,319, Cl. 324-219.000.

Route, William D.; Auman, John T.; and Rogers, Wesley A., to General Motors Corporation. Vehicle operator security system. 4,143,368, Cl. 340-543.000.

Rowe, Edward A., Jr.; and Cawley, William H., to Diamond Shamrock Corporation. Phosphatized and painted metal articles. 4,143,205, Cl. 428-469.000.

Roy, Prodyot; Sandusky, David W.; and Hartle, Robert T., to United States of America, Energy. Hydrogen consentration meter utilizing a diffusion tube composed of 2 ¼ Cr-1 Mo steel and a sleeve of nickel. 4,143,316, Cl. 324-33.000.

Rozmus, Walter J., to Kelsey-Hayes Company. Container for hot consolidating powder. 4,142,888, Cl. 75-201.000.

Ruff, David L.: *See—*
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Runo, William R. Sealable longitudinal sleeveless valve bag. 4,142,667, Cl. 229-62.500.

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S.R.C. Laboratories, Inc.: *See—*
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Sabbatini, Massimo, to Alcar S.R.L. Process for the preparation of para-substituted derivatives of alpha-phenylpropionic acid. 4,143,229, Cl. 562-496.000.

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Saffrahn, Fred C., to Pullman Incorporated. Safety roller assembly for plug doors. 4,142,328, Cl. 49-220.000.

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Saito, Masaaki; and Ohnishi, Akihiro, to Nissan Motor Company, Limited. Exhaust gas recirculation system. 4,142,496, Cl. 123-119.00A.

Saito, Seiichi, to Nihon Beru-Haueru Kabushiki Kaisha (Bell & Howell Japan, Ltd.). Exposure control circuit for camera. 4,142,785, Cl. 352-141.000.

Sakakibara, Naoji; Hashimoto, Nobuyuki; and Shibata, Norio, to Aisin Seiki Kabushiki Kaisha; and Toyota Jidosha Kogyo Kabushiki Kaisha. Electrothermally operated valve. 4,142,553, Cl. 137-625.440.

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Salvat, Francois; and Bouko, Jean, to Thomson-CSF. Omnidirectional antenna with a directivity diagram adjustable in elevation. 4,143,377, Cl. 343-755.000.

Salvaudon, Laurence; and Charlot, Jean-Claude, to Thomson-CSF. Arrangement for discriminating clutter signals from target signals in a radar system. 4,143 371. Cl. 343-16.00R.

Salvaudon, Laurence; and Charlot, Jean-Claude, to Thomson-CSF. Side-lobe blanking arrangement for a radar system. 4,143,372, Cl. 343-16.00M.

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Salzgeber, Daniel E., to Stanadyne, Inc. Temperature compensated fuel injection pump. 4,142,499, Cl. 123-140.00J.

Samokhvalov, Anatoly I.: *See—*
Kazanovich, Boleslav B.; Santurian, Germes R.; Fischenko, Petr A.; Potapenko, Iosif A.; Budnyatsky, David M.; Akopdzhanian, Felix K.; Oganesian, Tsolak R.; Kazarian, Edvard S.; Dzhanbaev, Salikh I.; Seryapov, Alexandr I.; Shakhnazarian, Albert T.; Mezhdo, Murad S.; Bachilo, Leverie L.; Bushmin, Anatoly P.; Gershman, Mikhail B.; Samokhvalov, Anatoly I.; and Oganesian, Georgy S., 4,142,579, Cl. 165-84.000.

Samuel Bingham Company: *See—*
Karmell, Yale, 4,143,092, Cl. 260-859.00R.

Sanchez, Richard E. Parking area divider. 4,142,814, Cl. 404-7.000.

Sandau, Harmut, to Robert Bosch GmbH. Valve arrangement for a pressurizable vessel. 4,142,546, Cl. 137-321.000.

Sandberg, Glenn A., to Formax, Inc. Control for cryogenic freezing tunnel. 4,142,376. Cl. 62-158.000.

Sandberg, Sven Olof; and Smith, Sven R. E., to Avesta Jernverks AB. Apparatus for wet processing textile material. 4,142,385, Cl. 68-178.000.

Sandel, Dan S., to Devon Industries, Inc. Surgical instrument holder and instrument tip protector device. 4,142,632, Cl. 206-363.000.

Sanders, James M.: *See—*
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,143,074, Cl. 260-586.00G.

Sandhagen, Hans-Joachim: *See—*
Hetzel, Hartmut; Gupta, Pramod; and Sandhagen, Hans-Joachim, 4,143,072, Cl. 260-573.000.

Sando Iron Works, Co., Ltd.: *See—*
Sando, Yoshikazu; and Ishidoshiro, Hiroshi, 4,142,854, Cl. 8-149.100.

Sando, Yoshikazu; and Ishidoshiro, Hiroshi, to Sando Iron Works, Co., Ltd. Continuous liquid processing of cloth in a high pressure steamer. 4,142,854, Cl. 8-149.100.

Sandoz Ltd.: *See—*
Mayerhoefer, Horst; and Wolf, Rainer, 4,143,101, Cl. 260-927.00R.
Seiler, Max-Peter, 4,143,143, Cl. 424-258.000.

Sandusky, David W.: *See—*
Roy, Prodyot; Sandusky, David W.; and Hartle, Robert T., 4,143,316, Cl. 324-33.000.

Sanilogical Corporation: *See—*
Kinzer, Jay, 4,142,975, Cl. 210-195.00R.

Sankey, Ivor G.: *See—*
Fisher, Leslie G.; and Sankey, Ivor G., 4,142,807, Cl. 403-13.000.

Sano, Yoshihide: *See—*
Yashiro, Kuniji; Saida, Shigeki; and Sano, Yoshihide, 4,142,917, Cl. 148-6.160.

Sanson, Jacques: *See—*
Cahn, Andre; Sanson, Jacques; Vanspeybroeck, Henri; Dumas, Robert; and Mosse, Michel, 4,143,181, Cl. 427-195.000.

Santurian, Germes R.: *See—*
Kazanovich, Boleslav B.; Santurian, Germes R.; Fischenko, Petr A.; Potapenko, Iosif A.; Budnyatsky, David M.; Akopdzhanian, Felix K.; Oganesian, Tsolak R.; Kazarian, Edvard S.; Dzhanbaev, Salikh I.; Seryapov, Alexandr I.; Shakhnazarian, Albert T.; Mezhdo, Murad S.; Bachilo, Leverie L.; Bushmin, Anatoly P.; Gershman, Mikhail B.; Samokhvalov, Anatoly I.; and Oganesian, Georgy S., 4,142,579, Cl. 165-84.000.

Sarantakis, Dimitrois, to American Home Products Corporation. Hexapeptides having analgesic activities. 4,143,032, Cl. 260-112.50R.

Sargisson, Donald F.; and Lahti, Daniel J., to General Electric Company. Hybrid mixer for a high bypass ratio gas turbofan engine. 4,142,365, Cl. 60-204.000.

Sarle, Charles R., to Wallace Murray Corporation. Turbocharger lubrication and exhaust system. 4,142,608, Cl. 184-6.110.

Sasaki, Takashi: *See—*
Habu, Teiji; Sasaki, Takashi; Tamura, Masahide; Korematsu, Shinobu; Wada, Tsuneo; Ishii, Hiroki; and Omura, Takayoshi, 4,142,897, Cl. 96-67.000.

Sasaki, Takehiko; and Koyama, Tamotsu, to Sharp Kabushiki Kaisha. Exchangeable liquid crystal panel. 4,142,780, Cl. 350-334.000.

Sassmannshausen, Knut O. Lighting fixture, for a tail, warning or signal light. 4,143,412, Cl. 362-297.000.

Satake, Jiro; Arai, Tetsuzo; Miyamoto, Yoshifumi; and Inoue, Hiroo, to Sumitomo Kinzoku Kogyo Kabushiki Kaisha. Corrosion preventive, coated metal pipe. 4,142,555, Cl. 138-143.000.

Satava, George L., to Midland Steel Products Co. Method of induction heat treating, quenching and tempering, of structural members. 4,142,923, Cl. 148-131.000.

Sato Gosei Co., Ltd.: *See—*
Suzuki, Tadashi, 4,143,113, Cl. 264-291.000.

Sato, Hideshi; Otsubo, Takashi; Goto, Syunsuke; Amano, Minoru; and Seriu, Naoyuki, to Nippon Steel Corporation. Method for automatic quantitative measurement of hydrogen in a metal and an apparatus for carrying out said method. 4,142,399, Cl. 73-19.000.

Sato, Kazuo: *See—*
Yamanaka, Teruo; Kato, Takayuki; Ozeki, Osamu; Sato, Kazuo; and Bito, Minoru, 4,143,370, Cl. 343-7.0VM.

Sato, Masaaki, to Olympus Optical Co., Ltd. Coreless motor. 4,143,288, Cl. 310-66.000.

Sato, Noriyuki: *See—*
Kubo, Hiroshi; Isono, Takashi; Seki, Nansho; and Sato, Noriyuki, 4,143,061, Cl. 260-453.0RW.

Sato, Yuzuru; Asano, Masao; Ishihara, Masao; and Terada, Sadatugu, to Konishiroku Photo Industry Co., Ltd. Color diffusion transfer photographic unit. 4,142,899, Cl. 96-77.000.

Satomi, Toyokazu; and Tabata, Yasuhiro, to Ricoh Company, Ltd. Electrophotographic apparatus. 4,142,792, Cl. 355-14.000.

Savarese, Salvatore L.: *See—*
Biondo, Joseph G.; and Savarese, Salvatore L., 4,142,629, Cl. 206-219.000.

Sbabo, Silvio. Device for tucking, retaining and curling the weft and to provide a selvedge of a woven fabric. 4,142,558, Cl. 139-434.000.

Sbabo, Silvio. Device for providing single or double selvedges for looms. 4,142,559, Cl. 139-434.000.

Scaife, Richard H. Safety and air deflector. 4,142,758, Cl. 296-91.000.

Schaaf, Thomas K.: *See—*
Hess, Hans-Jurgen E.; Johnson, Michael R.; Bindra, Jasjit S.; and Schaaf, Thomas K., 4,143,051, Cl. 260-332.20A.

Schaenzer, Gordon N. Centerfire cartridge priming tool. 4,142,441, Cl. 86-24.000.

Schaible, Wolfgang, to BBC Brown, Boveri & Company Limited. Apparatus for the supervision or correction of electrical signals. 4,143,353, Cl. 340-146.1BE.

Schaus, Herbert: *See—*
Modolell, Manuel; Munder, Paul G.; and Schaus, Herbert, 4,142,940, Cl. 195-139.000.

Schefer, Arnold. Expansion plug. 4,142,440, Cl. 85-83.000.

Scherrer, Robert A.; Hammar, Walton J.; and Stern, Richard M., to Riker Laboratories, Inc. Anti-microbial 2-nitro-3-phenyl benzofurans substituted by carboxy containing group. 4,143,154, Cl. 424-285.000.

Schestag, Rudolf, to Erwin Sick Gessellschaft mit beschrankter Haftung Optik-Electronik. Safety device for limiting the movement of doors and the like on contact with an obstacle. 4,143,367, Cl. 340-540.000.

Schexnayder, Lawrence F.: *See—*
Hicks, Leon E.; Peterson, Wayne A.; and Schexnayder, Lawrence F., 4,142,842, Cl. 417-288.000.

Schieber, John R.: *See—*
Mattioli, Terrence W.; and Schieber, John R., 4,142,402, Cl. 73-61.200.

Schilling, Robert J., to Minnesota Mining and Manufacturing Com-

pany. Variable speed drive apparatus for the scanning system of a copy machine. 4,142,793, Cl. 355-58.000.

Schira, John J.; Toelle, Alvin D.; and Phipps, Jack R., to Bendix Corporation, The. Closed loop exhaust gas recirculation control system. 4,142,493, Cl. 123-119.00A.

Schiron, Klaus; and Rupprath, Hans F. Swimming pool with wave generating installation. 4,142,258, Cl. 4-172.160.

Schlage Electronics, Inc.: *See*—
Walton, Charles A., 4,142,674, Cl. 235-492.000.

Schlagenhauf, Alan L. Cultivator disk shield assembly. 4,142,589, Cl. 172-510.000.

Schmauch, Hugo: *See*—
Weber, Heinrich; Dungs, Horst; Urbye, Klaus; Beckmann, Franz; Schmauch, Hugo; and Flasche, Karl H., 4,142,941, Cl. 201-6.000.

Schmitt, Frederick L.: *See*—
Hall, John B.; Wiegers, Wilhelmus J.; Hill, Ira D.; Novak, Robert M.; and Schmitt, Frederick L., 4,142,998, Cl. 252-522.000.

Schmitt, Robert J. Vehicle. 4,142,599, Cl. 180-21.000.

Schmitz, William E., to Westinghouse Electric Corp. Mass transit vehicle door control apparatus. 4,142,326, Cl. 49-118.000.

Schnell, William J.: *See*—
Bellotti, Marc; Schnell, William J.; and Munsch, John M., 4,142,974, Cl. 210-94.000.

Schoberl, Werner, to Licentia Patent-Verwaltungs-G.m.b.H. Semiconductor luminescence device with housing. 4,143,394, Cl. 357-72.000.

Scholten, Heinz: *See*—
Feldmann, Rainer; Panoch, Hans-Joachim; Scholten, Heinz; and Feinauer, Roland, 4,143,025, Cl. 260-33.40R.

Scholz, Donald T. Constant distortion volume control. 4,143,245, Cl. 179-1.0VL.

Scholz, Hansjurgen; Jahn, Walter; and Gimbel, Jurgen, to Daimler-Benz Aktiengesellschaft. Guide installation for a belt-band adapted to be wound-off or on a magazine roll of a safety belt system. 4,142,274, Cl. 24-163.00R.

Schon, Manfred: *See*—
Honel, Hans; Keller, Karlfried; Michel, Walter; and Schon, Manfred, 4,143,016, Cl. 260-29.40R.

Schonball, Walter. Mechanical overload systems for wind generators. 4,142,830, Cl. 416-41.000.

Schrama, Johannes T.: *See*—
Van Rooij, Karel P.; Schrama, Johannes T.; and Ludikhuize, Adrianus W., 4,143,383, Cl. 357-14.000.

Schreiber, William F.: *See*—
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,143,074, Cl. 260-586.00G.

Schreier, Joseph S. Fuel-oil mixing apparatus for internal-combustion engines. 4,142,486, Cl. 123-73.0AD.

Schroder, Johann: *See*—
Hermann, Wilhelm; Horster, Horst; Schroder, Johann; and Mahdjuri, Faramarz, 4,142,509, Cl. 126-270.000.

Schroeder, Hans Juergen A.: *See*—
Rothgery, Eugene F.; and Schroeder, Hans Juergen A., 4,143,044, Cl. 260-302.00D.

Schroeder, Vernon E. Double safety latch for trailer doors. 4,142,390, Cl. 70-371.000.

Schubert & Salzer: *See*—
Husges, Gerd; and Grimm, Eberhard, 4,142,356, Cl. 57-301.000.

Schuierer, Manfred, to Bruchner Apparatebau GmbH. Method for dyeing and finishing textile material. 4,142,852, Cl. 8-1.0XB.

Schulte, Wolfgang: *See*—
Naarmann, Herbert; Penzien, Klaus; and Schulte, Wolfgang, 4,143,221, Cl. 526-44.000.

Schulz, Donald N.; and Trivedi, Prakash D., to Firestone Tire & Rubber Company, The. Graft copolymers containing polyoxazoline and polyoxazine, and the preparation thereof. 4,143,100, Cl. 260-899.000.

Schwachhofer, Ghislain: *See*—
Jay, Pierre; and Schwachhofer, Ghislain, 4,142,983, Cl. 252-64.000.

Schwandt, Rudi; and Topfer, Dieter, to Hoechst Aktiengesellschaft. Apparatus for developing electrophotographic copying materials. 4,142,480, Cl. 118-661.000.

Schwartz, James W.: *See*—
Bing, Valentijn B.; and Schwartz, James W., 4,143,298, Cl. 315-3.000.

Schweiger, Richard G. Process for preparing a sulfate ester of a polyhydroxy polymer. 4,143,226, Cl. 536-59.000.

Schweitzer, Karl, to Maschinenfabrik Peter Zimmer Aktiengesellschaft. Pulse generator for intermittently energizing an actuating coil of a spray nozzle or the like. 4,142,684, Cl. 239-585.000.

Schweppe, Manfred: *See*—
Heumann, Hans; Hahn, Heinrich; Hilt, Walter; Liebing, Heinz; and Schweppe, Manfred, 4,142,885, Cl. 71-28.000.

Scientific Associates, Inc.: *See*—
Nebeker, Eugene B.; Rodriguez, Sergio E.; and Mikoalj, Paul G., 4,142,972, Cl. 210-84.000.

Scrivner, Timothy F.: *See*—
Standing, Charles N.; and Scrivner, Timothy F., 4,142,460, Cl. 99-353.000.

Searles, Stuart K.; and Hart, George A., to United States of America, Navy. Xenon bromide (XeBr) excimer laser. 4,143,336, Cl. 331-94.50G.

Seeberger, Rudolf, to Siemens Aktiengesellschaft. Cleaning device. 4,142,269, Cl. 15-256.520.

Seger, Michael: *See*—
Kraemer, Stefan; Seger, Michael; and Seidl, Alois, 4,142,910, Cl. 106-97.000.

Seidl, Alois: *See*—
Kraemer, Stefan; Seger, Michael; and Seidl, Alois, 4,142,910, Cl. 106-97.000.

Seiko Koki Kabushiki Kaisha: *See*—
Koyama, Mitsuo; Nakagawa, Tadashi; Watanabe, Masanori; Nemoto, Ichiro; and Onda, Eiichi, 4,142,789, Cl. 354-249.000.

Seiler, Max-Peter, to Sandoz Ltd. Substituted imidazo[5,1-a]isoquinolines. 4,143,143, Cl. 424-258.000.

Seimens Aktiengesellschaft: *See*—
Koschek, Gerald, 4,143,270, Cl. 250-357.000.

Seino, Kuniki: *See*—
Tanaka, Susumu; Sugiyama, Takashi; Seino, Kuniki; and Kondo, Shoji, 4,142,889, Cl. 96-1.00R.

Seki, Nansho: *See*—
Kubo, Hiroshi; Isono, Takashi; Seki, Nansho; and Sato, Noriyuki, 4,143,061, Cl. 260-453.0RW.

Sekiba, Toshinobu, to Tokyo Shibaura Electric Co., Ltd. Stud-type semiconductor device. 4,143,395, Cl. 357-79.000.

Sekiya, Fukuo: *See*—
Ebihara, Heihachiro; Sekiya, Fukuo; and Yamada, Takashi, 4,142,362, Cl. 58-50.00R.

Semerchan, Aik A.: *See*—
Vereschagin, Leonid F.; Semerchan, Aik A.; Gankevich, Tamara T.; Dmitriev, Mikhail E.; and Modenov, Vitaly P., 4,142,869, Cl. 51-295.000.

Sentry Products, Inc.: *See*—
Husman, Robert J., 4,142,478, Cl. 116-137.00A.

Seo, Kiyokazu: *See*—
Fujii, Yuichi; Suzuki, Yasuo; Yoshikawa, Rikizo; Seo, Kiyokazu; Mori, Katsunori; Kikuchi, Yasunobu; and Yoshida, Kazuo, 4,142,701, Cl. 248-544.000.

Seragnoli, Enzo, to G.D. Societa per Azioni. Storage unit for compensating production imbalances between cigarette-manufacturing machines and a packeting machine. 4,142,622, Cl. 198-347.000.

Seriu, Naoyuki: *See*—
Sato, Hideshi; Otsubo, Takashi; Goto, Syunsuke; Amano, Minoru; and Seriu, Naoyuki, 4,142,399, Cl. 73-19.000.

Sermon, Paul A., to Johnson, Matthey & Co., Limited. Method of removing nitric oxide from gases. 4,143,120, Cl. 423-239.000.

Serville, Claude: *See*—
Fontaine, Georges; Regazzoni, Francis; Serville, Claude; and Vinel, Rene, 4,142,618, Cl. 192-98.000.

Seryapov, Alexandr I.: *See*—
Kazanovich, Boleslav B.; Santurian, Germes R.; Fischenko, Petr A.; Potapenko, Iosif A.; Budnyatsky, David M.; Akopdzhanian, Felix K.; Oganesian, Tsolak R.; Kazarian, Edvard S.; Dzhanbaev, Salikh I.; Seryapov, Alexandr I.; Shakhnazarian, Albert T.; Mezhdo, Murad S.; Bachilo, Leverie L.; Bushmin, Anatoly P.; Gershman, Mikhail B.; Samokhvalov, Anatoly I.; and Oganesian, Georgy S., 4,142,579, Cl. 165-84.000.

Sewell, Raymond F.: *See*—
Skoch, Leroy V.; and Sewell, Raymond F., 4,143,169, Cl. 426-307.000.

Shaffer, Roy E., to United States of America, Army. Chemiluminescent process and detector for monitoring atmospheric contaminants. 4,142,859, Cl. 23-232.00R.

Shah, Syed M. M.; and Luksas, Anthony J., to Beatrice Foods Co. Food composition containing whey colloidal precipitate. 4,143,174, Cl. 426-570.000.

Shakhnazarian, Albert T.: *See*—
Kazanovich, Boleslav B.; Santurian, Germes R.; Fischenko, Petr A.; Potapenko, Iosif A.; Budnyatsky, David M.; Akopdzhanian, Felix K.; Oganesian, Tsolak R.; Kazarian, Edvard S.; Dzhanbaev, Salikh I.; Seryapov, Alexandr I.; Shakhnazarian, Albert T.; Mezhdo, Murad S.; Bachilo, Leverie L.; Bushmin, Anatoly P.; Gershman, Mikhail B.; Samokhvalov, Anatoly I.; and Oganesian, Georgy S., 4,142,579, Cl. 165-84.000.

Shanbhag, Sudhakar P.; Ku, Shun; Epps, Jackie R.; and Kempkes, Herbert T., to General Foods Corporation. Bacon analog and process. 4,143,164, Cl. 426-104.000.

Sharp Kabushiki Kaisha: *See*—
Sasaki, Takehiko; and Koyama, Tamotsu, 4,142,780, Cl. 350-334.000.

Shavit, Gideon, to Honeywell Inc. Optimized air conditioning system. 4,142,574, Cl. 165-16.000.

Shaw, Michael; and Haines, Robert C., to Dunlop Limited. Golf balls. 4,142,727, Cl. 273-232.000.

Sheehan, Edward P., to Massachusetts Bay Transportation Authority. Access control system. 4,142,620, Cl. 194-78.000.

Sheehan, John C.; and Lo, Young S., to Massachusetts Institute of Technology. Carbon and oxygen analogs of penicillin. 4,143,046, Cl. 260-306.70C.

Sheinberg, Lawrence: *See*—
Strauss, Herbert S.; and Sheinberg, Lawrence, 4,143,301, Cl. 315-73.000.

Shell, Irving W. Connector assembly. 4,142,809, Cl. 403-201.000.

Shell Oil Company: *See*—
Riesser, Gregor H., 4,143,083, Cl. 260-669.00R.

Sheller-Globe Corporation: *See*—
Klein, Donald R., 4,142,424, Cl. 74-501.00M.

Sheng, Ming N.: *See*—
Pedersen, S. Erik; and Sheng, Ming N., 4,143,056, Cl. 260-346.750.

Shepherd, John, to International Standard Electric Corporation. Horizontal deflection circuit. 4,143,306, Cl. 315-408.000.
Sheridon, Nicholas K., to Xerox Corporation. Method of making a twisting ball panel display. 4,143,103, Cl. 264-4.000.
Sheth, Ramesh D., to Belden Corporation. Shielded ultra-miniature cable. 4,143,238, Cl. 174-107.000.
Shevelin, Boris P.: *See—*
Ivin, Jury F.; Shevelin, Boris P.; Sokolov, Vasily I.; and Levischev, Arkady N., 4,142,671, Cl. 233-29.000.
Shibata, Norio: *See—*
Sakakibara, Naoji; Hashimoto, Nobuyuki; and Shibata, Norio, 4,142,553, Cl. 137-625.440.
Shigematsu, Tomohisa: *See—*
Suzuki, Yasoji; and Shigematsu, Tomohisa, 4,143,391, Cl. 357-44.000.
Shih, Kelvin; and Bishai, Makram N., to Hobart Corporation. Sanitizer alert system. 4,142,539, Cl. 134-113.000.
Shikibo Limited: *See—*
Terada, Yasuhiko; Yasuda, Jun; and Kuriyama, Masao, 4,142,853, Cl. 8-120.000.
Shikinami, Yasuo; Iida, Kosuke; Hata, Kunihiro; and Kasajima, Fumio, to Takiron Co., Ltd. Process for producing an open cell foam. 4,142,956, Cl. 204-159.140.
Shimamura, Tadao, to Nippon Electric Co., Ltd. Carrier wave recovery system apparatus using synchronous detection. 4,143,322, Cl. 325-320.000.
Shimodaira, Tadayoshi: *See—*
Mitsui, Yoshihiro; and Shimodaira, Tadayoshi, 4,142,463, Cl. 101-99.000.
Shinshu Seiki Kabushiki Kaisha and Kabushiki Kaisha Suwa Seikosha: *See—*
Mitsui, Yoshihiro; and Shimodaira, Tadayoshi, 4,142,463, Cl. 101-99.000.
Shionogi & Co., Ltd.: *See—*
Hirai, Kentaro; Fujishita, Toshio; Ishiba, Teruyuki; and Sugimoto, Hirohiko, 4,143,048, Cl. 260-308.00R.
Narisada, Masayuki; Onoue, Hiroshi; Tsuji, Teruji; Nishitani, Yasuhiro; Yoshioka, Mitsuru; Hamashima, Yoshio; and Nagata, Wataru, 4,143,038, Cl. 260-239.00A.
Shipko, Frederick J.: *See—*
Magovern, George J.; Shipko, Frederick J.; and Roland, George W., 4,142,531, Cl. 128-418.000.
Shirogami, Tamotsu: *See—*
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Showa Denko Kabushiki Kaisha: *See—*
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Shoyama, Etsuhiko: *See—*
Mizukami, Satoshi; Shoyama, Etsuhiko; Matsunobu, Kenji; Taniguchi, Masatosi; Konno, Kuniyoshi; and Kimura, Katunori, 4,143,290, Cl. 310-270.000.
Shuster, Edward J.: *See—*
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,143,074, Cl. 260-586.00G.
Shuto, Kazuya: *See—*
Kurita, Shoichi; Hiratsuka, Yoshitaka; and Shuto, Kazuya, 4,143,328, Cl. 328-155.000.
Sidles, Peter, Jr.; and Mankowski, Aleksander, to Caterpillar Tractor Co. Wheel drive assembly. 4,142,615, Cl. 192-4.00A.
Siemens Aktiengesellschaft: *See—*
Auracher, Franz; and Kersten, Ralf, 4,142,877, Cl. 65-4.00B.
Baur, Guenter; and Greubel, Waldemar, 4,142,781, Cl. 350-345.000.
Gross, Franz, 4,143,341, Cl. 333-157.000.
Mueller, Ruediger, 4,143,284, Cl. 307-213.000.
Seeberger, Rudolf, 4,142,269, Cl. 15-256.520.
Signature Guardian Systems, Inc.: *See—*
MacIntyre, Robert M., 4,143,355, Cl. 340-146.30C.
Signetics Corporation: *See—*
Mylroie, Steve W., 4,143,392, Cl. 357-43.000.
Sikob Svensk Industris Konstruktions-Och Berakningskontor AB: *See—*
Ackerfeldt, Bo I.; Olsson, Curt; and Crafoord, Carl-Goran, 4,142,563, Cl. 150-1.50C.
Ackerfeldt, Bo I.; Olsson, Curt; and Crafoord, Carl-Goran, 4,142,736, Cl. 280-652.000.
Sillion, Bernard: *See—*
Masson, Bernard; Rabilloud, Guy; and Sillion, Bernard, 4,143,077, Cl. 568-636.000.
Silverstein, Spencer: *See—*
McLeod, Francis; Silverstein, Spencer; and Kurtz, Robert, 4,142,412, Cl. 73-194.00A.
Simm, Walter; Gosling, Claus; Bonart, Richard; and von Falkai, Bela, to Bayer Aktiengesellschaft. Fibre fleece of electrostatically spun fibres and methods of making same. 4,143,196, Cl. 428-212.000.
Simokat, Frank L., to TII Corporation; and TII Corporation. Telephone isolation system. 4,143,250, Cl. 179-175.30R.
Simons, Michael J.: *See—*
Holstead, Colin; Kilminster, Kenneth N.; and Simons, Michael J., 4,142,901, Cl. 96-139.000.
Singer Company, The: *See—*
Bowles, Theodore L., 4,142,474, Cl. 112-158.00E.
Wald, Gerald R.; Weaver, Daniel J.; Piccardo, Michael J.; McLaughlin, James B.; and Treiber, Robert, 4,143,417, Cl. 364-900.000.
Zocher, Josef, 4,142,475, Cl. 112-181.000.
Sinn, Gustav; Matner, Martin; and Bross, Hermann J., to Bayer Aktiengesellschaft. Base material for artificial leather. 4,143,198, Cl. 428-290.000.
Sioux Steel Company: *See—*
Oliver, Norman J., 4,142,621, Cl. 198-318.000.
Sittmann, Brigitte: *See—*
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Skaats, Loren E. Timed water recirculation system. 4,142,515, Cl. 126-362.000.
SKF Compagnie d'Applications Mechaniques: *See—*
Fontaine, Georges; Regazzoni, Francis; Serville, Claude; and Vinel, Rene, 4,142,618, Cl. 192-98.000.
Skoch, Leroy V.; and Sewell, Raymond F., to Ralston Purina Company. Dry mink feed. 4,143,169, Cl. 426-307.000.
Skoczylas, Donald E.: *See—*
Wilkins, Robert L.; and Skoczylas, Donald E., 4,142,429, Cl. 82-82.000.
Smilgys, Bruno S., to Veeder Industries Inc. Counter wheel assembly with improved reset control mechanism. 4,142,672, Cl. 235-144.00D.
Smit, Elzo: *See—*
Broeksema, Egbert; and Smit, Elzo, 4,143,248, Cl. 179-100.40R.
Smith, Curtis P.: *See—*
Alberino, Louis M.; and Smith, Curtis P., 4,143,063, Cl. 260-453.0SP.
Smith, Hosea E., to Exxon Research & Engineering Co. Heat exchanger impingement protection. 4,142,578, Cl. 165-81.000.
Smith International, Inc.: *See—*
Dixon, Robert L.; Maxsted, Malcolm D.; and Kellner, Jackson M., 4,142,593, Cl. 175-53.000.
Maxsted, Malcolm D., 4,142,598, Cl. 175-344.000.
Smith, James D. B.; and Phillips, David C., to Westinghouse Electric Corp. Carboxylic acid composition for forming thermoparticulating coating. 4,142,416, Cl. 73-339.00R.
Smith, John L., to Princeton Applied Research Corporation. Apparatus and methods for effluent stream analysis. 4,142,944, Cl. 204-1.00T.
Smith, Michael R.; and Ferris, James E., to Eastman Kodak Company. Drop former utilizing gas pressure. 4,142,656, Cl. 222-325.000.
Smith, Nicholas K., to Bell Telephone Laboratories, Incorporated. Time division line interface circuit. 4,143,246, Cl. 179-15.0BS.
Smith, Sven R. E.: *See—*
Sandberg, Sven Olof; and Smith, Sven R. E., 4,142,385, Cl. 68-178.000.
Smith, Thomas W.; and Bibbee, Jeffrey N., to McNeil Corporation. Probe injection system for a tire curing process. 4,143,114, Cl. 264-326.000.
Smith, Todd G. Speaker structure. 4,142,604, Cl. 181-156.000.
Smithers, Philip G. K., deceased: *See—*
Brown, Edward G.; Turner, Eric J.; Smithers, Philip G. K., deceased; and Juviller, John J., executor, 4,142,268, Cl. 15-250.320.
SNIA Viscosa Societa Nazionale Industria Applicazioni Viscosa S.p.A.: *See—*
Ciaperoni, Aldemaro; Quaglia, Giuseppe; and Dall'Asta, Gino, 4,143,031, Cl. 260-45.75B.
Snyder, Ralph E. Chemical dispenser for flush type water tank toilets. 4,142,260, Cl. 4-223.000.
Socapex: *See—*
Lesaint, Emile, 4,142,810, Cl. 403-252.000.
Societa' Farmaceutici Italia S.p.A.: *See—*
Foglio, Maurizio; Franceschi, Giovanni; Masi, Paolo; and Suarato, Antonino, 4,143,037, Cl. 260-239.00A.
Societa' Italiana Resine S.I.R. S.p.A.: *See—*
Vargiu, Silvio; Passalenti, Beppino; and Pezzoli, Silvestro, 4,143,090, Cl. 260-837.00R.
Societe Anonyme Dite: Les Cables de Lyon: *See—*
Gauthier, Francis; and Mignien, Georges, 4,142,777, Cl. 350-96.210.
S.A. Texaco Belgium N.V.: *See—*
Broeckx, Willy P.; and Dulog, Lothar G., 4,142,865, Cl. 44-62.000.
Hermans, Johny C., 4,142,979, Cl. 252-46.700.
Societe d'Etudes de Machines Thermiques S.E.M.T.: *See—*
Rouam, Jean S. R., 4,143,319, Cl. 324-219.000.
Societe Francaise Duco: *See—*
Cahn, Andre; Sanson, Jacques; Vanspeybroeck, Henri; Dumas, Robert; and Mosse, Michel, 4,143,181, Cl. 427-195.000.
Societe Generale pour l'Emballage: *See—*
Cahn, Andre; Sanson, Jacques; Vanspeybroeck, Henri; Dumas, Robert; and Mosse, Michel, 4,143,181, Cl. 427-195.000.
Societe Nationale Elf Aquitaine (Production): *See—*
Barrault, Joel; Guisnet, Michel; Lucien, Jacques; and Maurel, Raymond, 4,143,052, Cl. 260-329.00R.
Sodetal, Societe Pour le Developpement du Filmentallique: *See—*
Maiffredy, Lionel; Peeters, Luc; and Theolier, Maurice, 4,142,919, Cl. 148-12.00R.
Soeda, Katsuji; Sakuma, Fumio; and Ooyama, Mitsuhiro, to Yamamoto Electric Industrial Co., Ltd. Control apparatus for an electrically driven sewing machine with stitch pattern producing device. 4,142,472, Cl. 112-158.00E.
Soeterik, Ernolff. Water base, non-polluting, slow leaching, anti-fouling paint. 4,143,015, Cl. 260-29.4UA.
Sokolov, Vasily I.: *See—*
Ivin, Jury F.; Shevelin, Boris P.; Sokolov, Vasily I.; and Levischev, Arkady N., 4,142,671, Cl. 233-29.000.

Sokolsky, Vladimir I.: *See—*
Filippov, Andrei N.; Nechaev, Alexandr N.; and Sokolsky, Vladimir I., 4,142,731, Cl. 277-96.100.
Solargen Electronics, Ltd.: *See—*
Hradcovsky, Rudolf R.; and Kozak, Otto R., 4,143,216, Cl. 429-204.000.
Solation Products, Inc.: *See—*
Newton, Alwin B., 4,142,514, Cl. 126-271.000.
Solbern Corp.: *See—*
Eisenberg, Bernard C., 4,142,560, Cl. 141-12.000.
Sollman, Kenneth J.; Pickwell, Robert J.; and Ranney, Maurice W., to Union Carbide Corporation. Organofunctional silane coupling agent-powder mixtures. 4,143,027, Cl. 260-42.150.
Solomon, Alvin: *See—*
Faleck, George; and Solomon, Alvin, 4,142,721, Cl. 273-73.00R.
Somraty, Tomas P. Two-stroke piston engine. 4,142,487, Cl. 123-73.00B.
Sony Corporation: *See—*
Kubota, Yukio, 4,143,405, Cl. 360-10.000.
Southern Weaving Company: *See—*
Ross, Edgar A.; and Tatum, Odes D., 4,143,236, Cl. 174-32.000.
Spehrley, Charles W.: *See—*
Thompson, Charles M.; Spehrley, Charles W.; and Thompson, Charles T., 4,142,594, Cl. 175-59.000.
Speranza, George P.: *See—*
McEntire, Edward E.; and Speranza, George P., 4,143,071, Cl. 260-561.00A.
Sperry Rand Corporation: *See—*
Armstrong, James B.; and Trimmier, J. Robert, 4,143,404, Cl. 358-253.000.
Hodge, Gordon W.; and Nye, Ted D., 4,143,418, Cl. 364-200.000.
Spezzano, Frank J.: *See—*
Greer, Edward M.; and Spezzano, Frank J., 4,142,316, Cl. 43-17.000.
Spin Optic: *See—*
Alsina, Pierre A., 4,142,299, Cl. 33-288.000.
Spivack, John D., to Ciba-Geigy Corporation. Alkylated 1,1'-biphenyl-2,2'-diyl phosphonites and stabilized compositions. 4,143,028, Cl. 260-45.95D.
Spokas, Romas B., to Borg-Warner Corporation. Dump valve for wet clutch. 4,142,619, Cl. 192-113.00B.
Sprague, Peter W., to E. R. Squibb & Sons, Inc. 7-Oxabicycloheptane- and 7-oxabicycloheptene compounds. 4,143,054, Cl. 260-346.220.
Sprague, Robert L.: *See—*
Adlerstein, Michael G.; and Sprague, Robert L., 4,142,893, Cl. 96-36.200.
Sprangle, Phillip A.; Drobot, Adam T.; and Manheimer, Wallace M., to United States of America, Navy. Charged-particle beam acceleration in a converging waveguide. 4,143,299, Cl. 315-5.410.
Sprayton Equipment Company: *See—*
Brown, Warren D., 4,142,708, Cl. 251-317.000.
Sprecker, Mark A.: *See—*
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,143,074, Cl. 260-586.00G.
Spremulli, Paul F.: *See—*
Bansal, Bihari; and Spremulli, Paul F., 4,143,232, Cl. 13-6.000.
SPS Technologies, Inc.: *See—*
Landt, Richard C., 4,142,439, Cl. 85-70.000.
Stahlmann, Rudolf; Brede, Uwe; and Homburg, Axel, to Dynamit Nobel Aktiengesellschaft. Projectile with sabot. 4,142,467, Cl. 102-93.000.
Stahlmann, Rudolf: *See—*
Ballreich, Kurt; Jensen, Ernst; Ketterl, Alfred; and Stahlmann, Rudolf, 4,142,466, Cl. 102-87.000.
Stamires, Dennis: *See—*
Alafandi, Hamid; and Stamires, Dennis, 4,142,995, Cl. 252-455.00Z.
Stanadyne, Inc.: *See—*
Salzgeber, Daniel E., 4,142,499, Cl. 123-140.00J.
Standard Oil Company, The: *See—*
Bartek, Joseph P.; and Grasselli, Robert K., 4,143,082, Cl. 260-668.00F.
Standard Oil Company (Indiana): *See—*
Anderson, Duane B.; and Edwards, Carl D., 4,142,595, Cl. 175-72.000.
Karll, Robert E.; and Lee, Richard J., 4,142,980, Cl. 252-51.50A.
Standing, Charles N.; and Scrivner, Timothy F., to Pillsbury Company, The. Apparatus for preparing crunchy food topping. 4,142,460, Cl. 99-353.000.
Standley, Robert D.: *See—*
Ramaswamy, Vellayan; and Standley, Robert D., 4,142,775, Cl. 350-96.140.
Stanko, John J. Fireplace systems. 4,142,507, Cl. 126-121.000.
Stanley, Thomas O., to RCA Corporation. Flat panel display device. 4,143,296, Cl. 313-422.000.
Stanley Works, The: *See—*
Czerwinski, Frank G., 4,142,693, Cl. 242-107.000.
Staroselsky, Naum, to Compressor Controls Corporation. Method and apparatus for preventing surge in a dynamic compressor. 4,142,838, Cl. 417-20.000.
Stauffer Chemical Company: *See—*
Arneklev, Duane R.; Baker, Don R.; and Walker, Francis H., 4,143,069, Cl. 260-559.00B.
Arzoumanidis, Gregory G.; Gold, Richard F.; and Michel, Christian G., 4,142,991, Cl. 252-429.00B.
Hensch, Edward J., 4,143,219, Cl. 521-107.000.
Walker, Francis H., 4,143,070, Cl. 260-561.0HL.
Walsh, Edward N.; and Honig, Milton L., 4,142,904, Cl. 260-45.85T.
Staufner, Helmut. Machine for counting flat articles. 4,142,454, Cl. 93-93.00C.
Stavropoulos, Stamatios M.; and Contreras Guerrero de Stavropoulos, Elvia E. Apparatus for extracting bone marrow specimens. 4,142,517, Cl. 128-2.00B.
Stavropoulos, William S.; and Crouch, Robert D., to Dow Chemical Company, The. Determination of triglycerides and glycerol. 4,142,938, Cl. 195-63.000.
Stawsky, Alfred: *See—*
Rosynsky, Victor; and Stawsky, Alfred, 4,142,864, Cl. 422-179.000.
Stefancsik, Ernest A., to Du Pont de Nemours, E. I., and Company. Process for preparing metalized azo pigments. 4,143,036, Cl. 260-202.000.
Stegeman, Bernardus H. M. J., to Koninklijke Emballage Industrie Van Leer B.V. Flow control device for the intravenous administration of liquids. 4,142,523, Cl. 128-214.00R.
Steinbach, Wilfried, to C. F. Wachendorff GmbH. Base sheets for printing with reactive dyes. 4,142,738, Cl. 282-27.500.
Steinecke, Rudolf; Gobke, Otto; and Gern, Klaus, to Daimler-Benz Aktiengesellschaft. Apparatus for preventing excessive running speed for internal combustion engine, especially for motor vehicles. 4,142,488, Cl. 123-99.000.
Steinkamp, Eckhard; Tautz, Jurgen; and Ries, Horst, to Kraftwerk Union Aktiengesellschaft. Core support structure for nuclear power plants. 4,142,936, Cl. 176-87.000.
Steinkuhl, Bernd, to Gewerkschaft Eisenhutte Westfalia. Scraper-chain conveyors. 4,142,812, Cl. 403-292.000.
Stellrecht, Hans H.: *See—*
Hansen, Russel W.; and Stellrecht, Hans H., 4,143,307, Cl. 318-16.000.
Stenzel, Jurgen; Heymer, Gero; and May, Christian, to Hoechst Aktiengesellschaft. Continuous production of pure phosphine. 4,143,121, Cl. 423-299.000.
Sterling Drug Inc.: *See—*
Jefferies, Patrick J.; and Ambrosiano, Nicholas A., 4,143,034, Cl. 260-160.000.
Stern, Richard M.: *See—*
Scherrer, Robert A.; Hammar, Walton J.; and Stern, Richard M., 4,143,154, Cl. 424-285.000.
Steuber, Charles P., to Anchortank, Inc. Multiple storage tank fabrication procedure. 4,142,284, Cl. 29-417.000.
Stevens, Robin T. A. Strain gauge arrangements. 4,142,405, Cl. 73-763.000.
Stevens, W. Gene; and Cobb, Raymond P., to Caterpillar Tractor Co. Transmission arrangement. 4,142,421, Cl. 74-15.630.
Stevenson, Peter A.: *See—*
Nettles, Michael L.; and Stevenson, Peter A., 4,142,661, Cl. 226-97.000.
Stewart, Iain G. H., to Niepmann AG. Method and apparatus for the production of explosive slurry. 4,142,928, Cl. 149-109.600.
Stikvoort, Eduard F., to U.S. Philips Corporation. Signal mixer including resistive and normal gate field-effect transistor. 4,143,387, Cl. 357-23.000.
Stingl, Hans A., to Toms River Chemical Corporation. Disazo dyestuffs having an alkoxy group on the first and/or second component. 4,143,035, Cl. 260-191.000.
Stockum, Glenn F., to Arbrook, Inc. Method of making medical glove. 4,143,109, Cl. 264-112.000.
Stoddart, Alan G., to Post Office. Detection of errors in digital signals. 4,143,354, Cl. 340-146.10E.
Stokes, Rembert R., to Bell Telephone Laboratories, Incorporated. Station set for mobile radiotelephone units. 4,142,312, Cl. 40-336.000.
Stolp, Myron G., to Bausch & Lomb Incorporated. Binocular case. 4,142,566, Cl. 150-52.00J.
Stoltz, Woodrow W. Telescoping vehicles. 4,142,644, Cl. 414-431.000.
Storer, John. Athletic protective pad device. 4,142,252, Cl. 2-24.000.
Straub, Hermann, to Sulzer Brothers Limited. Safety element for closing a line from a pressure vessel. 4,142,544, Cl. 137-67.000.
Strauss, Herbert S.; and Sheinberg, Lawrence, to Duro-Test Corporation. High intensity discharge lamp with integral means for arc extinguishing. 4,143,301, Cl. 315-73.000.
Strid, Alexander: *See—*
Hultman, Hans E.; and Strid, Alexander, 4,143,239, Cl. 178-68.000.
Striebel, Robert L., II: *See—*
Raghavachari, Srinivas T.; and Striebel, Robert L., II, 4,142,633, Cl. 206-366.000.
Stromblad, Mats V.; and Idstrom, Bo T., to Berol Kemi AB. Process for the preparation of polyurethane foam. 4,143,004, Cl. 521-174.000.
Stubbs, John K.: *See—*
Leeming, Michael R. G.; and Stubbs, John K., 4,143,147, Cl. 424-270.000.
Suarato, Antonino: *See—*
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Dyroff, David R.; and Suchanek, Walton F., Jr., 4,143,125, Cl. 424-48.000.
Sugano, Mamoru: *See—*
Oohama, Tadashi; Yamaguchi, Ryozo; and Sugano, Mamoru, 4,143,040, Cl. 260-239.55C.

Sugihara, Hirosada: *See*—
Nohara, Akira; Sugihara, Hirosada; and Ukawa, Kiyoshi, 4,143,042, Cl. 546-89.000.
Sugimoto, Hirohiko: *See*—
Hirai, Kentaro; Fujishita, Toshio; Ishiba, Teruyuki; and Sugimoto, Hirohiko, 4,143,048, Cl. 260-308.00R.
Sugiyama, Takashi: *See*—
Tanaka, Susumu; Sugiyama, Takashi; Seino, Kuniki; and Kondo, Shoji, 4,142,889, Cl. 96-1.00R.
Sullair Corporation: *See*—
Olsaker, Oleif, 4,142,765, Cl. 308-207.00R.
Sulzer Brothers Limited: *See*—
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Sumitomo Chemical Co., Ltd.: *See*—
Funada, Mitsuaki; Hayatsu, Kazuo; and Noguchi, Takanobu, 4,143,085, Cl. 260-677.00A.
Sumitomo Kinzoku Kogyo Kabushiki Kaisha: *See*—
Satake, Jiro; Arai, Tetsuzo; Miyamoto, Yoshifumi; and Inoue, Hiroo, 4,142,555, Cl. 138-143.000.
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Moore, Robert E., 4,143,079, Cl. 260-648.00F.
Supanich, Joseph: *See*—
Ahlen, Karl G.; Bergstrom, Per-Olof; and Supanich, Joseph, 4,142,425, Cl. 74-760.000.
Sutton, Paula J. Telephone system. 4,143,243, Cl. 179-90.00B.
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McLeod, Francis; Silverstein, Spencer; and Kurtz, Robert, 4,142,412, Cl. 73-194.00A.
Suzuki, Ryoichi; Uchiyama, Takashi; Matsumoto, Seiichi; Amikura, Takashi; and Tsunekawa, Tokuichi, to Canon Kabushiki Kaisha. Liquid crystal display device for a camera. 4,142,786, Cl. 354-32.000.
Suzuki, Tadashi, to Sato Gosei Co., Ltd. Method for stretching attachment devices at high speeds. 4,143,113, Cl. 264-291.000.
Suzuki, Yasoji; and Shigematsu, Tomohisa, to Tokyo Shibaura Electric Co., Ltd. Integrated circuit device. 4,143,391, Cl. 357-44.000.
Suzuki, Yasuo: *See*—
Fujii, Yuichi; Suzuki, Yasuo; Yoshikawa, Rikizo; Seo, Kiyokazu; Mori, Katsunori; Kikuchi, Yasunobu; and Yoshida, Kazuo, 4,142,701, Cl. 248-544.000.
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Backstrom, Goran; and Svensson, Orvar, 4,143,260, Cl. 219-121.00P.
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Sweat, Tommy: *See*—
Griner, Henry J.; Griner, Wade; Hyars, Claude; and Sweat, Tommy, 4,142,350, Cl. 56-27.500.
Swengel, Robert C., Jr.: *See*—
Barnes, Ronald B.; Brinser, Stanley B.; and Swengel, Robert C., Jr., 4,142,771, Cl. 339-95.00R.
Swerbinsky, Leo, to General Electric Company. Impact reinforcement and repair method for refrigerator cabinet liners. 4,142,766, Cl. 312-214.000.
Swift, Graham: *See*—
Emmons, William D.; and Swift, Graham, 4,143,020, Cl. 260-29.6SQ.
Swiss Aluminium Ltd.: *See*—
Luckey, Franz, 4,142,718, Cl. 273-30.000.
SWS Silicones Corporation: *See*—
Martin, Eugene R., 4,143,089, Cl. 260-827.000.
Szegi, Alexander. Method and apparatus for preserving palette pigments. 4,142,627, Cl. 206-1.700.
Szymaszek, Jan W.: *See*—
Wong, Joe; and Szymaszek, Jan W., 4,142,996, Cl. 252-518.000.
Tabata, Yasuhiro: *See*—
Satomi, Toyokazu; and Tabata, Yasuhiro, 4,142,792, Cl. 355-14.000.
Tachino, Kenzo, to Mitsubishi Denki Kabushiki Kaisha. Elevator control system. 4,142,609, Cl. 187-29.00R.
Tacke, Peter: *See*—
Panek, Peter; Woditsch, Peter; Ritter, Wolfgang; and Tacke, Peter, 4,143,026, Cl. 260-42.140.
Tadano Ltd.: *See*—
Okuda, Toru, 4,142,710, Cl. 254-86.00H.
Tadmor, Zehev, to USM Corporation. Method for processing polymeric material. 4,142,805, Cl. 366-97.000.
Tajima, Sakae; Mouri, Takashi; and Morisaki, Shigeyoshi, to Toyo Soda Manufacturing Co., Ltd. Chromium deposition solution. 4,142,948, Cl. 204-43.00R.
Takagi, Makoto: *See*—
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Takahashi, Hisashi: *See*—
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Takahashi, Kenji: *See*—
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Takano, Toshiaki: *See*—
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Takashima, Seiichi: *See*—
Iwabuchi, Yoshitaka; Takashima, Seiichi; and Nishiyama, Togo, 4,143,409, Cl. 360-106.000.
Takasugi, Hisashi: *See*—
Takaya, Takao; Masugi, Takashi; Takasugi, Hisashi; and Kochi, Hiromu, 4,143,166, Cl. 424-246.000.
Takata, Tadasi: *See*—
Yoshitomi, Yuji; Tamura, Zensuke; Kamohara, Hideaki; Omura, Keiji; Murakami, Yoshimasa; Takata, Tadasi; and Nuwa, Teruo, 4,142,581, Cl. 165-173.000.
Takaya, Takao; Masugi, Takashi; Takasugi, Hisashi; and Kochi, Hiromu, to Fujisawa Pharmaceutical Co., Ltd. 7[(2-Hydroxyamino-2-disubstituted phenyl-acetamido)-]3-heterocyclicthio-3-cephem-4-carboxylic acids. 4,143,166, Cl. 424-246.000.
Takeda Chemical Industries, Ltd.: *See*—
Miyashiro, Yutaka; Ogawa, Masao; Yamazaki, Yoshio; and Igarasi, Seizi, 4,143,201, Cl. 428-403.000.
Nohara, Akira; Sugihara, Hirosada; and Ukawa, Kiyoshi, 4,143,042, Cl. 546-89.000.
Takiron Co., Ltd.: *See*—
Shikinami, Yasuo; Iida, Kosuke; Hata, Kunihiro; and Kasajima, Fumio, 4,142,956, Cl. 204-159.140.
Tammes, Jan B.; and Toebes, Marinus, to Hollandse Signaalapparaten B.V. Analog-to-digital converter with gain correction and offset correction. 4,143,361, Cl. 340-347.0CC.
Tamura, Masahide: *See*—
Habu, Teiji; Sasaki, Takashi; Tamura, Masahide; Korematsu, Shinobu; Wada, Tsuneo; Ishii, Hiroki; and Omura, Takayoshi, 4,142,897, Cl. 96-67.000.
Tamura, Sadahiro: *See*—
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Yoshitomi, Yuji; Tamura, Zensuke; Kamohara, Hideaki; Omura, Keiji; Murakami, Yoshimasa; Takata, Tadasi; and Nuwa, Teruo, 4,142,581, Cl. 165-173.000.
Tanahashi, Toshio; and Fujioka, Yasuo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Exhaust double pipe of an internal combustion engine. 4,142,366, Cl. 60-322.000.
Tanaka, Susumu; Sugiyama, Takashi; Seino, Kuniki; and Kondo, Shoji, to Minolta Camera Kabushiki Kaisha. Electrophotographic process using a cadmium sulfide photoconductor having hystereses character. 4,142,889, Cl. 96-1.00R.
Tanaka, Yoshiho. Encapsulated foodstuff. 4,143,162, Cl. 426-89.000.
Taniguchi, Masatosi: *See*—
Mizukami, Satoshi; Shoyama, Etsuhiko; Matsunobu, Kenji; Taniguchi, Masatosi; Konno, Kuniyoshi; and Kimura, Katunori, 4,143,290, Cl. 310-270.000.
Tanimoto, Teruo: *See*—
Nakasugi, Hajime; Kimura, Tsurugi; Tanimoto, Teruo; and Sakimoto, Tsutomu, 4,142,713, Cl. 266-87.000.
Tarumi, Niro; and Tuchiya, Makoto, to Hoya Lens Corporation. Process of producing soft contact lenses. 4,143,017, Cl. 260-29.70H.
Tatum, Odes D.: *See*—
Ross, Edgar A.; and Tatum, Odes D., 4,143,236, Cl. 174-32.000.
Tautz, Jurgen: *See*—
Steinkamp, Eckhard; Tautz, Jurgen; and Ries, Horst, 4,142,936, Cl. 176-87.000.
Tazuma, James J.; and Bergomi, Angelo, to Goodyear Tire & Rubber Company, The. Method of preparing dibenzothiazolyl disulfides. 4,143,045, Cl. 260-306.500.
Technicon Instruments Corporation: *See*—
Masson, Pierre L.; and Heremans, Joseph F., 4,143,124, Cl. 424-12.000.
Tecl, Bohuslav: *See*—
Kirsch, Wilhelm; Tecl, Bohuslav; and Fahrbach, Erich, 4,142,334, Cl. 51-395.000.
Teijin Limited: *See*—
Miura, Kazuchika, 4,142,409, Cl. 73-144.000.
Tekken Construction Co. Ltd.: *See*—
Kumaki, Yoshihiro; Kawade, Junpei; Takano, Toshiaki; and Inoue, Mitsuo, 4,142,763, Cl. 299-1.000.
Teledyne Industries Inc.: *See*—
Adair, William A., 4,142,294, Cl. 33-80.000.
Terada, Sadatugu: *See*—
Sato, Yuzuru; Asano, Masao; Ishihara, Masao; and Terada, Sadatugu, 4,142,899, Cl. 96-77.000.
Terada, Yasuhiko; Yasuda, Jun; and Kuriyama, Masao, to Shikibo Limited. Process for improving cellulose fiber properties and for dyeing the same. 4,142,853, Cl. 8-120.000.
Terai, Masaaki: *See*—
Yoshitoshi, Makoto; Kawashima, Isao; Kishimoto, Hideo; Terai, Masaaki; and Kato, Kazumi, 4,143,247, Cl. 179-81.00R.
Texaco Development Corp.: *See*—
McEntire, Edward E.; and Speranza, George P., 4,143,071, Cl. 260-561.00A.
Texaco Inc.: *See*—
Kalfoglou, George, 4,142,582, Cl. 166-273.000.
Texas Instruments Incorporated: *See*—
McCormack, Kent; and McNeill, Dane A., 4,143,269, Cl. 250-352.000.
Theeuwes, Felix: *See*—
Zaffaroni, Alejandro; Michaels, Alan S.; and Theeuwes, Felix, 4,142,526, Cl. 128-260.000.
Theolier, Maurice: *See*—
Maiffredy, Lionel; Peeters, Luc; and Theolier, Maurice, 4,142,919, Cl. 148-12.00R.
Thiel, Max: *See*—
Wiedemann, Fritz; Kampe, Wolfgang; Thiel, Max; Bartsch, Wolfgang; and Roesch, Egon, 4,143,149, Cl. 424-273.00P.
Thoma, Jean U. Axial piston rotary hydraulic machines. 4,142,450, Cl. 91-485.000.

Thoma, Paul E.: *See—*
Colla, Jeannine O.; and Thoma, Paul E., 4,142,400, Cl. 73-23.000.
Thomas, Heinz: *See—*
Muller, Erwin; and Thomas, Heinz, 4,143,220, Cl. 521-129.000.
Thomerson, Clarence T.: *See—*
Mayfield, Windel O.; Montague, John M.; and Thomerson, Clarence T., 4,142,371, Cl. 405-224.000.
Thompson, Charles M.; Spehrley, Charles W.; and Thompson, Charles T., to American Coldset Corporation. Method and core barrel apparatus for obtaining and retrieving subterranean formation samples. 4,142,594, Cl. 175-59.000.
Thompson, Charles T.: *See—*
Thompson, Charles M.; Spehrley, Charles W.; and Thompson, Charles T., 4,142,594, Cl. 175-59.000.
Thompson, Gerald L., to Eli Lilly and Company. 4'-Deoxyvincristine and related compounds. 4,143,041, Cl. 260-244.400.
Thomson-Brandt: *See—*
Bricot, Claude; and Lehureau, Jean C., 4,143,402, Cl. 358-128.000.
Thomson-CSF: *See—*
Menard, Christian, 4,142,489, Cl. 123-117.00R.
Salvat, Francois; and Bouko, Jean, 4,143,377, Cl. 343-755.000.
Salvaudon, Laurence; and Charlot, Jean-Claude, 4,143,371, Cl. 343-16.00R.
Salvaudon, Laurence; and Charlot, Jean-Claude, 4,143,372, Cl. 343-16.00M.
Tonnel, Eugene; and Depey, Maurice, 4,143,421, Cl. 365-180.000.
Thornton, Thomas F. Different stiffness continuous length teeth cleaner. 4,142,538, Cl. 132-89.000.
Thut, Kurt, to Osterwalder AG. Thread grinding machine. 4,142,330, Cl. 51-95.0TG.
Thyssen Industrie AG: *See—*
Koppers, Manfred; and Dombrowski, Otto, 4,142,449, Cl. 91-468.000.
Tieche, Jacques. Anchoring screw for dental fillings. 4,142,293, Cl. 32-15.000.
TII Corporation: *See—*
Simokat, Frank L., 4,143,250, Cl. 179-175.30R.
Simokat, Frank L., 4,143,250, Cl. 179-175.30R.
Tile Council of America, Inc.: *See—*
Burley, David R., 4,143,019, Cl. 260-29.6RW.
Ellis, Jeffrey R.; and Wagner, Herman B., 4,142,911, Cl. 106-97.000.
Titanium Fabrication Corporation: *See—*
Feige, Norman G., 4,142,664, Cl. 228-165.000.
Tobol, Helen K.; and Noveroske, Robert L., to Dow Chemical Company, The. Ethers of 4-halomethylpyridines. 4,143,144, Cl. 424-263.000.
Toebes, Marinus: *See—*
Tammes, Jan B.; and Toebes, Marinus, 4,143,361, Cl. 340-347.0CC.
Toelle, Alvin D.: *See—*
Schira, John J.; Toelle, Alvin D.; and Phipps, Jack R., 4,142,493, Cl. 123-119.00A.
Togni, Giulio, to Salvarani S.p.A. Prefabricated hygienic-sanitary components for bath-room and toilet outfit. 4,142,255, Cl. 4-1.000.
Tokai Rubber Industries Ltd.: *See—*
Fujii, Yuichi; Suzuki, Yasuo; Yoshikawa, Rikizo; Seo, Kiyokazu; Mori, Katsunori; Kikuchi, Yasunobu; and Yoshida, Kazuo, 4,142,701, Cl. 248-544.000.
Tokyo Shibaura Electric Co., Ltd.: *See—*
Harada, Nozomu; and Kubota, Nobuhisa, 4,143,178, Cl. 427-85.000.
Ishii, Takashi; Nishida, Katsutoshi; Komatsu, Michiyasu; and Tsuge, Akihiko, 4,143,107, Cl. 264-65.000.
Nagasawa, Shigeru, 4,143,330, Cl. 329-101.000.
Noguchi, Hideo, 4,143,390, Cl. 357-41.000.
Sekiba, Toshinobu, 4,143,395, Cl. 357-79.000.
Suzuki, Yasoji; and Shigematsu, Tomohisa, 4,143,391, Cl. 357-44.000.
Ueno, Mitsushi; and Shirogami, Tamotsu, 4,143,212, Cl. 429-7.000.
Tom McGuane Industries, Inc.: *See—*
Ludwig, George C., 4,142,677, Cl. 236-101.00E.
Tomari, Seiji: *See—*
Yamakami, Hiroshi; Mitsuhashi, Yasuo; Tomari, Seiji; and Tsuchiya, Kaichi, 4,142,982, Cl. 252-62.10P.
Tominaga, Yasunori: *See—*
Abe, Yuuhei; Mohri, Katsuo; Azuma, Nobuo; Kuwahara, Kazuyoski; Yabe, Yuhiko; and Tominaga, Yasunori, 4,142,375, Cl. 62-158.000.
Tomita, Mamoru: *See—*
Ogasa, Katsuhiro; Tomita, Mamoru; and Mizota, Teruhiko, 4,142,916, Cl. 127-63.000.
Toms River Chemical Corporation: *See—*
Stingl, Hans A., 4,143,035, Cl. 260-191.000.
Tomy Kogyo Co., Inc.: *See—*
Matsumoto, Takao, 4,142,715, Cl. 273-1.00L.
Tonnel, Eugene; and Depey, Maurice, to Thomson-CSF. Tetrode transistor memory logic cell. 4,143,421, Cl. 365-180.000.
Topfer, Dieter: *See—*
Schwandt, Rudi; and Topfer, Dieter, 4,142,480, Cl. 118-661.000.
Toyo Kogyo Co., Ltd.: *See—*
Kobayashi, Kazuo; Yokooku, Katsuhiko; and Nomura, Kazumasa, 4,142,492, Cl. 123-119.00A.
Toyo Soda Manufacturing Co., Ltd.: *See—*
Tajima, Sakae; Mouri, Takashi; and Morisaki, Shigeyoshi, 4,142,948, Cl. 204-43.00R.
Toyota, Akinori; Minami, Syuji; and Kashiwa, Norio, to Mitsui Petrochemical Industries Ltd. Process for polymerizing alpha-olefins and catalyst therefor. 4,143,223, Cl. 526-125.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Fujii, Yuichi; Suzuki, Yasuo; Yoshikawa, Rikizo; Seo, Kiyokazu; Mori, Katsunori; Kikuchi, Yasunobu; and Yoshida, Kazuo, 4,142,701, Cl. 248-544.000.
Hattori, Kyo, 4,142,676, Cl. 236-87.000.
Hibino, Masaru; and Morishita, Michio, 4,142,491, Cl. 123-119.00A.
Inoue, Takashi, 4,142,505, Cl. 123-211.000.
Kawaguchi, Hiroshi, 4,142,764, Cl. 303-6.00R.
Morimitsu, Nobutaka; Kumoi, Tomio; and Tsuruta, Katsuhiko, 4,143,262, Cl. 219-270.000.
Ochiai, Takeshi, 4,142,601, Cl. 180-99.000.
Sakakibara, Naoji; Hashimoto, Nobuyuki; and Shibata, Norio, 4,142,553, Cl. 137-625.440.
Tanahashi, Toshio; and Fujioka, Yasuo, 4,142,366, Cl. 60-322.000.
Toyota Kogyo Kabushiki Kaisha: *See—*
Yamanaka, Teruo; Kato, Takayuki; Ozeki, Osamu; Sato, Kazuo; and Bito, Minoru, 4,143,370, Cl. 343-7.0VM.
Trafton, Ronald H. Post apparatus and methods of constructing and utilizing same. 4,142,343, Cl. 52-721.000.
Transcience Industries, Inc.: *See—*
Davis, Manfred, 4,143,324, Cl. 325-429.000.
Treanor, Charles E.: *See—*
Rich, Joseph W.; Bergman, Richard C.; and Treanor, Charles E., 4,142,955, Cl. 204-157.10R.
Treibacher Chemische Werke Aktiengesellschaft: *See—*
Zeiringer, Hans, 4,142,871, Cl. 51-308.000.
Treiber, Robert: *See—*
Wald, Gerald R.; Weaver, Daniel J.; Piccardo, Michael J.; McLaughlin, James B.; and Treiber, Robert, 4,143,417, Cl. 364-900.000.
Trico Products Corporation: *See—*
Brown, Edward G.; Turner, Eric J.; Smithers, Philip G. K., deceased; and Juviller, John J., executor, 4,142,268, Cl. 15-250.320.
Trimmier, J. Robert: *See—*
Armstrong, James B.; and Trimmier, J. Robert, 4,143,404, Cl. 358-253.000.
Trivedi, Prakash D.: *See—*
Schulz, Donald N.; and Trivedi, Prakash D., 4,143,100, Cl. 260-899.000.
Trochoidal Gear Technology, Inc.: *See—*
Baranyi, Sandor J., 4,142,426, Cl. 74-801.000.
Troner, Jakob: *See—*
Flammer, Wieland; Weber, Roland; Weiher, Gerhard; and Troner, Jakob, 4,142,288, Cl. 29-628.000.
Tru-Flex Metal Hose Corporation: *See—*
McGowen, Lloyd E.; and Messick, Ernest E., 4,142,743, Cl. 285-177.000.
Trump, Dennis H., to Nashua Control Instruments. Step and repeat system. 4,142,794, Cl. 355-92.000.
TRW Inc.: *See—*
Liberty, R. John, 4,143,407, Cl. 360-51.000.
Murray, Ronald A., 4,142,704, Cl. 248-680.000.
Tseng, Ching Y.: *See—*
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,143,074, Cl. 260-586.00G.
Tseng, Eugene; and Bassin, Morton, to Maryland Environmental Service. Ash coated cellular glass pellet. 4,143,202, Cl. 428-406.000.
Tsentralny Nauchno-Issledovatelsky Avtomobilny I Avtomotorny Institut Nami: *See—*
Filippov, Andrei N.; Nechaev, Alexandr N.; and Sokolsky, Vladimir I., 4,142,731, Cl. 277-96.100.
Tsuchiya, Kaichi: *See—*
Yamakami, Hiroshi; Mitsuhashi, Yasuo; Tomari, Seiji; and Tsuchiya, Kaichi, 4,142,982, Cl. 252-62.10P.
Tsugawa, Kiyoshi: *See—*
Nishikata, Masumi; and Tsugawa, Kiyoshi, 4,143,179, Cl. 427-58.000.
Tsuge, Akihiko: *See—*
Ishii, Takashi; Nishida, Katsutoshi; Komatsu, Michiyasu; and Tsuge, Akihiko, 4,143,107, Cl. 264-65.000.
Tsuiki, Takehiko; Onishi, Ken; Ishida, Yoshinobu; and Chiba, Kazuhiro, to Mitsubishi Denki Kabushiki Kaisha. PCM Recording and reproducing system. 4,143,406, Cl. 360-48.000.
Tsuji, Teruji: *See—*
Narisada, Masayuki; Onoue, Hiroshi; Tsuji, Teruji; Nishitani, Yasuhiro; Yoshioka, Mitsuru; Hamashima, Yoshio; and Nagata, Wataru, 4,143,038, Cl. 260-239.00A.
Tsunekawa, Tokuichi: *See—*
Suzuki, Ryoichi; Uchiyama, Takashi; Matsumoto, Seiichi; Amikura, Takashi; and Tsunekawa, Tokuichi, 4,142,786, Cl. 354-32.000.
Tsurukawa, Nobuaki: *See—*
Oogami, Eiryo; and Tsurukawa, Nobuaki, 4,142,272, Cl. 16-130.000.
Tsuruta, Katsuhiko: *See—*
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Tsushima, Ken; and Takahashi, Hisashi, to Mitsubishi Jukogyo Kabushiki Kaisha. Openable rotor chamber construction for a vertical blower. 4,142,828, Cl. 415-201.000.
Tuchiya, Makoto: *See—*
Tarumi, Niro; and Tuchiya, Makoto, 4,143,017, Cl. 260-29.70H.

Tuller, Bruce H.: *See*—
Casey, Gary L.; and Tuller, Bruce H., 4,142,683, Cl. 239-585.000.
Turner, Eric J.: *See*—
Brown, Edward G.; Turner, Eric J.; Smithers, Philip G. K., deceased; and Juviller, John J., executor, 4,142,268, Cl. 15-250.320.
Turner, Robert B., to Johnson & Johnson. Method for making probe covers for electronic thermometers. 4,143,112, Cl. 264-249.000.
Turner, Sam R., to Xerox Corporation. Homopolymers of a fluorenone derivative having pendant electron acceptor groups. 4,143,225, Cl. 528-220.000.
Tuson, Samuel, to Enterprise d'Equipments Mecaniques et Hydrauliques E.M.H. Pivotal connecting device for pivotally connecting an off-shore articulated column structure to a sea bottom. 4,142,820, Cl. 405-202.000.
Tuten, William J., to Avco Corporation. Digital fuze. 4,142,442, Cl. 89-6.500.
Tyers, G. Frank O.: *See*—
Brownlee, Robert R.; Tyers, G. Frank O.; and Neff, Paul H., 4,142,533, Cl. 128-419.0PT.
Tyzack, Donald E.: *See*—
Cutting, Alan B.; and Tyzack, Donald E., 4,143,300, Cl. 315-39.610.
Ubel, Helmut, to International Standard Electric Corporation. Arrangement for optimizing the running speed of a track-bound vehicle. 4,142,700, Cl. 246-182.00B.
Uchiyama, Takashi: *See*—
Suzuki, Ryoichi; Uchiyama, Takashi; Matsumoto, Seiichi; Amikura, Takashi; and Tsunekawa, Tokuichi, 4,142,786, Cl. 354-32.000.
Uda, Ryoji; and Kimura, Tomoya, to Kawasaki Jukogyo Kabushiki Kaisha. Lubricating oil pump for two cycle internal combustion engines. 4,142,504, Cl. 123-198.00D.
Uecker, Ronald L.: *See*—
Mallozzi, Philip J.; Epstein, Harold M.; Jung, Richard G.; Applebaum, David C.; Fairand, Barry P.; Gallagher, William J.; Uecker, Ronald L.; and Muckerheide, Myron C., 4,143,275, Cl. 250-503.000.
Ueda, Hiroshi; and Yoshizaki, Akira, to Minolta Camera Kabushiki Kaisha. Automatic diaphragm control mechanism for a single lens reflex camera. 4,142,787, Cl. 354-38.000.
Uehara, Tsutomu: *See*—
Hisazumi, Nobuyuki; and Uehara, Tsutomu, 4,143,011, Cl. 260-23.0EP.
Ueno, Mitsushi; and Shirogami, Tamotsu, to Tokyo Shibaura Electric Co., Ltd. Sealed storage battery. 4,143,212, Cl. 429-7.000.
Ukawa, Kiyoshi: *See*—
Nohara, Akira; Sugihara, Hirosada; and Ukawa, Kiyoshi, 4,143,042, Cl. 546-89.000.
Ulmer, Richard W., to Motorola, Inc. High resolution auto-zero circuit for analog-to-digital converter. 4,143,362, Cl. 340-347.0NT.
Ulrich, Ray R., to Ulrich, Ray R., Sr. Chain saw adapter for use particularly for trimming hedges and cutting brush. 4,142,292, Cl. 30-371.000.
Ulrich, Ray R., Sr.: *See*—
Ulrich, Ray R., 4,142,292, Cl. 30-371.000.
Union Carbide Corporation: *See*—
Bryant, David R., 4,143,075, Cl. 260-604.0HF.
Gill, William A., 4,143,002, Cl. 521-137.000.
Jenkinson, Richard D.; and Carder, Charles H., 4,143,013, Cl. 260-29.1SB.
Kearns, James D., 4,142,963, Cl. 208-129.000.
Sollman, Kenneth J.; Pickwell, Robert J.; and Ranney, Maurice W., 4,143,027, Cl. 260-42.150.
Weinberg, Kurt; and Johnson, Gordon C., 4,143,057, Cl. 260-429.00R.
Union Oil Company of California: *See*—
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Uniroyal, Inc.: *See*—
Matthews, Demetreos N.; and Nudenberg, Walter, 4,143,029, Cl. 260-45.8NT.
Uniroyal Limited: *See*—
Duncan, David J., 4,143,099, Cl. 260-897.00A.
United Kingdom Atomic Energy Authority: *See*—
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United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See*—
Adams, Lionel B.; Lovell, Keith V.; Partridge, Gordon; and Ringrose, Barbara J., 4,143,218, Cl. 429-254.000.
Barton, Norman P., 4,142,799, Cl. 356-153.000.
U.S. Armament Corporation: *See*—
Foote, John P., 4,142,314, Cl. 42-16.000.
United States Borax & Chemical Corporation: *See*—
Hunter, Don L.; and Belles, Wayne S., 4,142,886, Cl. 71-92.000.
United States Gypsum Company: *See*—
Mustoe, Robert M.; and Zajonc, Fred H., 4,142,471, Cl. 108-57.100.
United States of America
Army: *See*—
King, Gerard J.; and Martino, Joseph F., Jr., 4,142,925, Cl. 148-175.000.
Shaffer, Roy E., 4,142,859, Cl. 23-232.00R.
Energy: *See*—
Gencsoy, Hasan T.; and Gardner, John F., 4,142,868, Cl. 48-86.00R.
Gruen, Dieter M.; Mendelsohn, Marshall H.; and Dwight, Austin E., 4,142,300, Cl. 34-15.000.
Lindenbaum, Arthur; and Rosenthal, Marcia W., 4,143,131, Cl. 424-85.000.
Miller, Donald M., 4,142,296, Cl. 33-181.00R.
Roy, Prodyot; Sandusky, David W.; and Hartle, Robert T., 4,143,316, Cl. 324-33.000.
Interior: *See*—
Cashdollar, Kenneth L.; Hertzberg, Martin; and Litton, Charles D., 4,142,417, Cl. 73-355.00R.
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Gruber, Robert P., 4,143,314, Cl. 323-15.000.
Navy: *See*—
Heckman, Paul J., Jr.; and McCardell, Peter D., 4,143,400, Cl. 358-95.000.
Keown, John D., 4,143,350, Cl. 340-5.00R.
Searles, Stuart K.; and Hart, George A., 4,143,336, Cl. 331-94.50G.
Sprangle, Phillip A.; Drobot, Adam T.; and Manheimer, Wallace M., 4,143,299, Cl. 315-5.410.
Transportation: *See*—
Darrouzet, John L., 4,143,378, Cl. 343-854.000.
U.S. Philips Corporation: *See*—
Broeksema, Egbert; and Smit, Elzo, 4,143,248, Cl. 179-100.40R.
Cayzac, Jacques C.; le Can, Claude; Brun, Roger; Devillers, Jacques; and Joinnet, Etienne, 4,143,365, Cl. 340-347.0SH.
Gross, Ulrich, 4,142,433, Cl. 84-1.030.
Gross, Ulrich, 4,142,434, Cl. 84-1.010.
Hermann, Wilhelm; Horster, Horst; Schroder, Johann; and Mahdjuri, Faramarz, 4,142,509, Cl. 126-270.000.
Hultman, Hans E.; and Strid, Alexander, 4,143,239, Cl. 178-68.000.
Lamboo, Theodorus F., 4,142,702, Cl. 248-174.000.
Stikvoort, Eduard F., 4,143,387, Cl. 357-23.000.
Van Rooij, Karel P.; Schrama, Johannes T.; and Ludikhuize, Adrianus W., 4,143,383, Cl. 357-14.000.
Zwanenburg, Dirk J.; and Junginger, Hans-Georg, 4,142,987, Cl. 252-301.360.
United States Steel Corporation: *See*—
Pignocco, Arthur J.; and Kachik, Robert H., 4,142,556, Cl. 138-146.000.
United Technologies Corporation: *See*—
de Simone, Gary J., 4,142,837, Cl. 416-223.00R.
Eckart, Frederick; Elliott, Raymond A.; and Feigl, Christopher H., 4,143,261, Cl. 219-121.00L.
Fradenburgh, Evan A., 4,142,697, Cl. 244-7.00R.
Niebanck, Charles F.; Klusman, Steven A.; and Kenigsberg, Irwin J., 4,142,698, Cl. 244-17.170.
Rybicki, Robert C.; and Cuerden, Brian, 4,142,833, Cl. 416-134.00A.
UOP Inc.: *See*—
Carlson, David H. J.; and Deering, James R., 4,142,964, Cl. 208-206.000.
Upjohn Company, The: *See*—
Alberino, Louis M.; and Smith, Curtis P., 4,143,063, Cl. 260-453.0SP.
Lednicer, Daniel, 4,143,156, Cl. 424-311.000.
McLaughlin, Alexander; Reymore, Harold E., Jr.; and Richter, Reinhard H., 4,143,014, Cl. 260-29.2TN.
Nelson, Norman A., 4,143,053, Cl. 260-343.600.
Urbye, Klaus: *See*—
Weber, Heinrich; Dungs, Horst; Urbye, Klaus; Beckmann, Franz; Schmauch, Hugo; and Flasche, Karl H., 4,142,941, Cl. 201-6.000.
USM Corporation: *See*—
Tadmor, Zehev, 4,142,805, Cl. 366-97.000.
Uyeda, Tim M.: *See*—
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Vander Arend, Peter J.: *See*—
Abraham, John K.; and Vander Arend, Peter J., 4,142,922, Cl. 148-36.000.
Vanderzanden, Allan J.; and Ozawa, Max K., to Hyster Company. Exhaust gas diffuser. 4,142,606, Cl. 181-231.000.
van Konijnenburg, Jan T.; and Butter, Johannes A. M., to Hoogovens Ijmuiden, B.V. Repairing damaged refractory walls by gunning. 4,143,104, Cl. 264-30.000.
Vann Industries, Inc.: *See*—
Neice, George G.; and Brown, Joseph A., 4,142,351, Cl. 56-202.000.
Van Rooij, Karel P.; Schrama, Johannes T.; and Ludikhuize, Adrianus W., to U.S. Philips Corporation. Controllable impedance attenuator having all connection contacts on one side. 4,143,383, Cl. 357-14.000.
Vanspeybroeck, Henri: *See*—
Cahn, Andre; Sanson, Jacques; Vanspeybroeck, Henri; Dumas, Robert; and Mosse, Michel, 4,143,181, Cl. 427-195.000.
Varda, Eugene I., to Pullman Incorporated. Door locking mechanisms for hoppers. 4,142,751, Cl. 292-217.000.
Varga, Julianna K.: *See*—
McCorsley, Clarence C., III; and Varga, Julianna K., 4,142,913, Cl. 106-186.000.
Vargiu, Silvio; Passalenti, Beppino; and Pezzoli, Silvestro, to Societa' Italiana Resine S.I.R. S.p.A. Hardenable compositions comprising an unsaturated epoxy ester and an ethylenically unsaturated monomer. 4,143,090, Cl. 260-837.00R.
Vargo, William R., to Husky Storage Systems, Inc. Prefabricated storage shelves. 4,142,638, Cl. 211-187.000.
Varner, Horace M.: *See*—
Dressel, Michael O.; and Varner, Horace M., 4,142,596, Cl. 175-113.000.
Vaseen, Vesper A. Separating gaseous nitrogen oxides from other gases by paramagnetic separation in a liquid media. 4,142,874, Cl. 55-48.000.

VDO Adolf Schindling AG: *See*—
Jung, Wilhelm; and Kister, Horst, 4,142,415, Cl. 73-304.00C.
Mann, Arnold, 4,142,602, Cl. 180-108.000.
Veazey, Thomas M., to Monsanto Company. Apparatus for treating a tow of filaments with a liquid. 4,142,279, Cl. 28-219.000.
Veb Weimar Werk, Stammbetrieb des Veb Weimar Kombinat: *See*—
Bohner, Gunter; and Wolfram, Friedhelm, 4,142,585, Cl. 171-82.000.
Veba-Chemie Aktiengesellschaft: *See*—
Bohmholdt, Gerd; Deininger, Gunter; Gerlach, Hans-Otto; Hahn, Winfried; and Huwels, Wilhelm, 4,142,875, Cl. 55-72.000.
Heumann, Hans; Hahn, Heinrich; Hilt, Walter; Liebing, Heinz; and Schweppe, Manfred, 4,142,885, Cl. 71-28.000.
Veeder Industries Inc.: *See*—
Smilgys, Bruno S., 4,142,672, Cl. 235-144.00D.
Vegiard, Lucien. Wash shield for paint roller. 4,142,540, Cl. 134-138.000.
Velten & Pulver, Inc.: *See*—
Diver, James J.; Heide, Henry A.; and Masse, Basil J., 4,142,624, Cl. 198-425.000.
Vereecke, Frank J.: *See*—
Hemsath, Klaus H.; and Vereecke, Frank J., 4,142,712, Cl. 266-44.000.
Vereinigte Baubeschlagfabriken Gretsch & Co. GmbH: *See*—
Biermann, Peter; and Sittmann, Brigitte, 4,142,735, Cl. 280-618.000.
Vereschagin, Leonid F.; Semerchan, Aik A.; Gankevich, Tamara T.; Dmitriev, Mikhail E.; and Modenov, Vitaly P. Compact-grained diamond material. 4,142,869, Cl. 51-295.000.
Verma, Monica H., to Du Pont de Nemours, E. I., and Company. Water based modified styrene allyl alcohol resin primer. 4,143,012, Cl. 260-23.0ST.
Vernaleken, Hugo: *See*—
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Walsh, Edward N.; and Honig, Milton L., to Stauffer Chemical Company. Flame retardant polycarboxy alkyl and aryl phosphonates. 4,142,904, Cl. 260-45.85T.
Walters, Leslie K., to General Motors Corporation. Fuel tank venting system. 4,142,647, Cl. 220-85.800.
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Walton, Charles A., to Schlage Electronics, Inc. Recognition and identification key having adaptable resonant frequency and methods of adapting same. 4,142,674, Cl. 235-492.000.
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Wanke, Ronald L. Dispensing closure with nonrigid follower. 4,142,657, Cl. 222-386.500.
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Watson, William R., to Nalco Chemical Company. Lubricating system for plow blades. 4,142,590, Cl. 172-755.000.
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Whelan, Joseph G., Jr.; and Moss, James P. Surgical tubular member. 4,142,528, Cl. 128-350.00R.
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White, Allen A., to Hesston Corporation. Strand tying mechanism. 4,142,746, Cl. 289-2.000.
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Zaffaroni, Alejandro; Michaels, Alan S.; and Theeuwes, Felix, to Alza Corporation. Osmotic releasing system with means for changing release therefrom. 4,142,526, Cl. 128-260.000.

Zahn, Carl W.; and Clayton, Hadwen A., to Phillips Petroleum Company. Recovery of natural gas liquids by partial condensation. 4,142,876, Cl. 62-37.000.

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Zeyra, Abraham. Unitary inflation devices for helium balloons and their like. 4,142,322, Cl. 46-90.000.

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Zwanenburg, Dirk J.; and Junginger, Hans-Georg, to U.S. Philips Corporation. Luminescent material dispersion. 4,142,987, Cl. 252-301.360.

Zwolinski, Leon M.; and Frink, John W., to Allied Chemical Corporation. Novel adhesive, molding and filler composition incorporating toluene diisocyanate residue. 4,143,008, Cl. 260-18.0TN.

LIST OF DEFENSIVE PUBLICATIONS

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Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O. G. 687.

Brackman, Derek S., to Imperial Chemical Industries Limited. Polyolefin compositions containing calcium carbonate. T980,003, 3-6-79, Cl. 260-42.370.

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Hsieh, Shuang-shii; and Lehr, James R., to Tennessee Valley Authority. Phosphate flotations with saturated branched-chain fatty acid isomers. T980,002, 3-6-79, Cl. 209-166.000.

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Livesay, Richard E., to Caterpillar Tractor Co. Tire and continuous track system. T980,006, 3-6-79, Cl. 305-34.000.

Minnick, Lawrence E.; and Pack, Randall W., to Electric Power Research Institute. UV Viewing through sodium coolant. T980,001, 3-6-79, Cl. 176-19.00R.

Naylor, William C., to International Business Machines Corporation. Interactive design of character-recognition logics. T980,008, 3-6-79, Cl. 340-146.3AQ.

Osborn, Harland J., to Eastman Kodak Company. Phenolic dye-forming couplers. T980,004, 3-6-79, Cl. 260-556.00A.

Pack, Randall W.: *See*—
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Shirley, Arthur R., Jr., to Tennessee Valley Authority. Granulation and coating by improved method of heat removal. T980,005, 3-6-79, Cl. 264-7.000.

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Nelson, Norman A., to Upjohn Company, The. 2-Decarboxy-2-hydroxy-methyl-16-fluoro-PGE_1 compounds. Re. 29,926, Cl. 260-586.00R.

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Schmidt, J. Frank, III. Maple tree. 4,392, 3-6-79, Cl. 51.000.

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465 4,142,329

CLASS 51

95 TG 4,142,330
102 4,142,331
125 4,142,332
287 4,142,333
295 4,142,869
298 4,142,870
308 4,142,871
309 4,142,872
395 4,142,334

CLASS 52

90 4,142,335
166 4,142,336
169.7 4,142,337
173 R 4,142,338
224 4,142,339
262 4,142,340
263 4,142,341
585 4,142,342
721 4,142,343
742 4,142,344

CLASS 53

54 4,142,345
416 4,142,346
591 4,142,347

CLASS 55

12 4,142,873
48 4,142,874
72 4,142,875

CLASS 56

10.2 4,142,348
14.4 4,142,349
27.5 4,142,350
202 4,142,351

CLASS 57

15 4,142,352
22 4,142,353
122 4,142,357
263 4,142,358
293 AT 4,142,355
301 4,142,356
328 4,142,354

CLASS 58

23 R 4,142,359
4,142,360
50 R 4,142,361
4,142,362
58 4,142,363

CLASS 60

39.28 R 4,142,364
204 4,142,365
322 4,142,366
325 4,142,367
413 4,142,368
425 4,142,369

CLASS 62

37 4,142,876
78 4,142,372
135 4,142,377
4,142,378
138 4,142,373
155 4,142,374
158 4,142,375
4,142,376
179 4,142,379
471 4,142,380
510 4,142,381

CLASS 63

2 4,142,382
23 4,142,383

CLASS 65

4 B 4,142,877
18 4,142,878
4,142,879
29 4,142,880
40 4,142,881
114 4,142,882
276 4,142,883
356 4,142,884

CLASS 66

149 S 4,142,384

CLASS 68

178 4,142,385

CLASS 69

43 4,142,386

CLASS 70

278 4,142,387
316 4,142,388
359 4,142,389
371 4,142,390
461 4,142,391

CLASS 71

28 4,142,885
92 4,142,886

CLASS 72

113 4,142,392
181 4,142,393
220 4,142,394
319 4,142,395
329 4,142,396
407 4,142,397
481 4,142,398

CLASS 73

19 4,142,399
23 4,142,400
37.5 4,142,401
61.2 4,142,402
76 4,142,403
118 4,142,407
140 4,142,408
144 4,142,409
147 4,142,410
155 4,142,411
194 A 4,142,412
198 4,142,413
216 4,142,414
304 C 4,142,415
339 R 4,142,416
355 R 4,142,417
363.9 4,142,418
440 4,142,419
728 4,142,420
762 4,142,404
763 4,142,405
819 4,142,406

CLASS 74

15.63 4,142,421
393 4,142,422
492 4,142,423
501 M 4,142,424
760 4,142,425
801 4,142,426
863 4,142,427

CLASS 75

58 4,142,887
201 4,142,888

CLASS 81

15.5 4,142,428

CLASS 82

82 4,142,429

CLASS 83

23 4,142,430
335 4,142,431

CLASS 84

1.01 4,142,432
4,142,434
1.03 4,142,433
1.15 4,142,435
1.16 4,142,436
1.24 4,142,437
360 4,142,438

CLASS 85

70 4,142,439
83 4,142,440

CLASS 86

24 4,142,441

CLASS 89

6.5 4,142,442
33 R 4,142,443

CLASS 90

15 R 4,142,444

CLASS 91

6 4,142,445
26 4,142,446
280 4,142,447
372 4,142,448
468 4,142,449
485 4,142,450
491 4,142,451
506 4,142,452

CLASS 93

36.01 4,142,453
58.2 R 4,142,455
93 C 4,142,454

CLASS 96

1 PE 4,142,890
1 R 4,142,889
29 D 4,142,891
36 4,142,892
36.2 4,142,893
48 HD 4,142,896
63 4,142,894
66.4 4,142,895
67 4,142,897
75 4,142,898
77 4,142,899
94 R 4,142,900
139 4,142,901

CLASS 98

40 D 4,142,456
58 4,142,457
115 LH 4,142,458

CLASS 99

334 4,142,459
353 4,142,460

CLASS 100

118 4,142,461

CLASS 101

38 R 4,142,462
99 4,142,463
128.3 4,142,464
330 4,142,465

CLASS 102

87 4,142,466
93 4,142,467

CLASS 104

124 4,142,468
148 MS 4,142,469

CLASS 105

26 R 4,142,470

CLASS 106

1.23 4,142,902
14.24 4,142,903
22 4,142,905
50 4,142,906
52 4,142,907
64 4,142,908
87 4,142,909
97 4,142,910
4,142,911
98 4,142,912
186 4,142,913
288 Q 4,142,914
304 4,142,915

CLASS 108

57.1 4,142,471

CLASS 112

158 E 4,142,472
4,142,473
4,142,474
181 4,142,475
262 4,142,476

CLASS 114

263 4,142,477

CLASS 116

137 A 4,142,478

CLASS 118

623 4,142,479
661 4,142,480

CLASS 123

25 B 4,142,481
32 EB 4,142,483
32 EE 4,142,482
41.35 4,142,484
46 R 4,142,485
73 AD 4,142,486
73 B 4,142,487
99 4,142,488
117 R 4,142,489
4,142,490
119 A 4,142,491
4,142,492
4,142,493
4,142,495
4,142,496
119 C 4,142,494
139 AN 4,142,497
139 AP 4,142,498
140 J 4,142,499
193 H 4,142,501
193 P 4,142,500
195 A 4,142,502
198 D 4,142,503
4,142,504
198 E Re.29,923
211 4,142,505

CLASS 126

5 4,142,506
121 4,142,507
263 4,142,508
270 4,142,509
271 4,142,510
4,142,511
4,142,512
4,142,513
4,142,514
362 4,142,515

CLASS 127

63 4,142,916

CLASS 128

1 R 4,142,516
2 B 4,142,517
2.05 G 4,142,518
57 4,142,519
74 4,142,520
82.1 4,142,521
133 4,142,522
214 F 4,142,524
214 R 4,142,523
218 R 4,142,525
260 4,142,526
348 4,142,527
350 R 4,142,528
401 4,142,529
418 4,142,530
4,142,531
419 P 4,142,532
419 PT 4,142,533

CLASS 131

8 R 4,142,534
17 AC 4,142,535
173 4,142,536
240 GG 4,142,537

CLASS 132

89 4,142,538

CLASS 134

113 4,142,539
138 4,142,540
143 4,142,541

CLASS 136

89 CD 4,143,235
89 PC 4,143,233
4,143,234

CLASS 137

1 4,142,542
15 4,142,543
67 4,142,544
240 4,142,545
321 4,142,546
344 4,142,547
4,142,548
446 4,142,552
469 4,142,549
538 4,142,550
557 4,142,860
615 4,142,551
625.44 4,142,553

CLASS 138

109 4,142,554
143 4,142,555
146 4,142,556

CLASS 139

425 A 4,142,557
434 4,142,558
4,142,559

CLASS 141

12 4,142,560
82 4,142,561
206 4,142,562

CLASS 148

6.16 4,142,917
11.5 C 4,142,918
12 B 4,142,920
12 R 4,142,919
32 4,142,921
36 4,142,922
131 4,142,923
171 4,142,924
175 4,142,925
187 4,142,926

CLASS 149

109.6 4,142,928
194 4,142,927

CLASS 150

1.5 C 4,142,563
31 4,142,564
52 J 4,142,566

52 R 4,142,565

CLASS 152

353 R 4,142,567
354 R 4,142,568
409 4,142,569

CLASS 156

72 4,142,929
123 R 4,142,930
257 4,142,931
384 4,142,932

CLASS 160

349 R 4,142,570

CLASS 162

396 4,142,933

CLASS 164

88 4,142,571
147 4,142,572
169 4,142,573

CLASS 165

16 4,142,574
29 4,142,575
45 4,142,576
49 Re.29,924
80 4,142,577
81 4,142,578
84 4,142,579
142 4,142,580
173 4,142,581

CLASS 166

273 4,142,582
311 4,142,583
359 4,142,584

CLASS 171

82 4,142,585

CLASS 172

42 4,142,586
47 4,142,587
190 4,142,588
510 4,142,589
755 4,142,590

CLASS 173

12 4,142,591

CLASS 174

32 4,143,236
87 4,143,237
92 4,142,592
107 4,143,238

CLASS 175

53 4,142,593
59 4,142,594
72 4,142,595
113 4,142,596
304 4,142,597
344 4,142,598

CLASS 176

78 4,142,934
87 4,142,935
4,142,936
4,142,937

CLASS 178

19 4,143,240
68 4,143,239

CLASS 179

1 G 4,143,244
1 VL 4,143,245
15 AQ 4,143,241
15 BS 4,143,246
15 BW 4,143,242
81 R 4,143,247
90 B 4,143,243
100.4 R 4,143,248
146 E 4,143,249
175.3 A 4,143,251
175.3 R 4,143,250

CLASS 180

21 4,142,599
44 F 4,142,600
99 4,142,601
108 4,142,602

CLASS 181

148 4,142,603
156 4,142,604
204 4,142,605
231 4,142,606
259 4,142,607

CLASS 184

6.11 4,142,608

CLASS 187

29 R 4,142,609

CLASS 188

71.9 4,142,610
72.9 4,142,611

CLASS 192

3 G 4,142,612
4 A 4,142,613
4,142,614
4,142,615
56 R 4,142,616
60 4,142,617
98 4,142,618
113 B 4,142,619

CLASS 194

78 4,142,620

CLASS 195

63 4,142,938
96 4,142,939
139 4,142,940

CLASS 198

318 4,142,621
347 4,142,622
410 4,142,623
425 4,142,624
570 4,142,625
796 4,142,626

CLASS 200

5 A 4,143,253
5 B 4,143,252
16 R 4,143,254
81.9 M 4,143,255
144 R 4,143,256

CLASS 201

6 4,142,941
39 4,142,942

CLASS 203

6 4,142,943

CLASS 204

1 T 4,142,944
16 4,142,945
4,142,946
39 4,142,947
43 R 4,142,948
84 4,142,949
96 4,142,950
98 4,142,951
106 4,142,952
129.3 4,142,953
146 4,142,954
157.1 R 4,142,955
159.14 4,142,956
164 4,142,957
192 P 4,142,958
286 4,142,959
299 R 4,142,960

CLASS 206

1.7 4,142,627
63.3 4,142,628
219 4,142,629
277 4,142,630
306 4,142,631
363 4,142,632
366 4,142,633
392 4,142,634
622 4,142,635

CLASS 208

91 4,142,961
109 4,142,962
129 4,142,963
206 4,142,964

CLASS 209

487 4,142,965
524 4,142,636

CLASS 210

22 R 4,142,966
23 F 4,142,967
32 4,142,968
36 4,142,969
49 4,142,970
77 4,142,971
84 4,142,972
90 4,142,973
94 4,142,974
195 R 4,142,975
404 4,142,976
519 4,142,977

CLASS 211

182 4,142,637
187 4,142,638

CLASS 215

260 4,142,645

CLASS 219

60 A 4,143,257
73 4,143,258
121 EM 4,143,259
121 L 4,143,261
121 P 4,143,260
270 4,143,262

CLASS 220

22 4,142,646
85.8 4,142,647
203 4,142,648

CLASS 221

82 4,142,649

CLASS 222

135 4,142,650
185 4,142,651
189 4,142,652
207 4,142,653
309 4,142,654
318 4,142,655
325 4,142,656
386.5 4,142,657
400.7 4,142,658
514 4,142,659

CLASS 224

45 P 4,142,660

CLASS 226

97 4,142,661

CLASS 228

110 4,142,662
147 4,142,663
165 4,142,664

CLASS 229

33 4,142,665
39 R 4,142,666
62.5 4,142,667

CLASS 233

1 R 4,142,668
7 4,142,669
20 R 4,142,670
29 4,142,671

CLASS 235

92 TA 4,142,680
144 D 4,142,672
458 4,142,673
492 4,142,674

CLASS 236

86 4,142,675
87 4,142,676
101 E 4,142,677

CLASS 237

2 B 4,142,678
54 4,142,679

CLASS 239

318 4,142,681
488 4,142,682
585 4,142,683
4,142,684
655 4,142,685

CLASS 241

101.7 4,142,686
194 4,142,687
236 4,142,688
247 4,142,689

CLASS 242

46.4 4,142,690
55 4,142,691
107 4,142,692
4,142,693
211 4,142,694

CLASS 244

3.14 4,142,695
3.16 4,142,696
7 R 4,142,697
17.17 4,142,698
83 K 4,142,699

CLASS 246

182 B 4,142,700

CLASS 248

174 4,142,702
214 4,142,703
544 4,142,701
680 4,142,704

CLASS 249

188 4,142,705

CLASS 250

199 4,143,263
210 4,143,264
211 J 4,143,266
213 R 4,143,265
231 R 4,143,267
231 SE 4,143,268
328 4,142,706
352 4,143,269
357 4,143,270
368 4,143,271
425 4,143,272
445 T 4,143,273
473 4,143,274
503 4,143,275
507 4,143,276
4,143,277
527 4,143,278
556 4,143,279

CLASS 251

77 4,142,707
317 4,142,708

CLASS 252

8.7 4,142,978
46.7 4,142,979
51.5 A 4,142,980
62.1 P 4,142,981
4,142,982
64 4,142,983
105 4,142,984
106 4,142,985
301.36 4,142,987
301.4 P 4,142,986
373 4,142,988
411 R 4,142,989
429 B 4,142,991
429 C 4,142,990
431 P 4,142,992
447 4,142,993
450 4,142,994
455 Z 4,142,995
518 4,142,996
522 4,142,997
4,142,998
544 4,142,999

CLASS 254

86 H 4,142,710
168 4,142,709

CLASS 256

65 4,142,711

CLASS 260

2.3 4,143,001
17 R 4,143,005
17.4 ST 4,143,006
4,143,007
18 PT 4,143,009
18 TN 4,143,008
23 EP 4,143,011
23 S 4,143,010
23 ST 4,143,012
29.1 SB 4,143,013
29.2 TN 4,143,014
29.4 R 4,143,016
29.4 UA 4,143,015
29.6 E 4,143,021
29.6 M 4,143,018
29.6 RW 4,143,019
29.6 SQ 4,143,020
29.7 H 4,143,017
30.4 SB 4,143,022
30.8 R 4,143,023
31.2 XA 4,143,024
33.4 R 4,143,025
42.14 4,143,026
42.15 4,143,027
45.75 B 4,143,030
4,143,031
45.8 NT 4,143,029
45.85 T 4,142,904
45.95 D 4,143,028
112.5 R 4,143,032
155 4,143,033
160 4,143,034
191 4,143,035
202 4,143,036
239 A 4,143,037
4,143,038
239.1 4,143,039
239.55 C 4,143,040
244.4 4,143,041
302 D 4,143,044
302 S 4,143,043
306.5 4,143,045
306.7 C 4,143,046
307 R 4,143,047
308 D 4,143,049
308 R 4,143,048
329 R 4,143,052
332.2 A 4,143,051
332.2 C 4,143,050
343.6 4,143,053
346.22 4,143,054
346.73 4,143,055
346.75 4,143,056
429 R 4,143,057
438.1 4,143,058
448 R 4,143,059
448.2 N 4,143,060
453 RW 4,143,061
453 SP 4,143,062
4,143,063
456 R 4,143,064
464 4,143,065
544 Y 4,143,067
545 R 4,143,068
559 B 4,143,069
561 A 4,143,071
561 HL 4,143,070
573 4,143,072
574 4,143,073
586 G 4,143,074
586 R Re.29,926
604 HF 4,143,075
609 F 4,143,076
648 F 4,143,079
653.6 4,143,078
666.5 4,143,081
668 F 4,143,082
669 R 4,143,083
671 R 4,143,084
677 A 4,143,085
683 PD 4,143,086
683.15 R 4,143,087
825 4,143,088
827 4,143,089
837 R 4,143,090
859 R 4,143,091
4,143,092
860 4,143,093
873 4,143,094
874 4,143,095
878 R 4,143,096
884 4,143,097
888 4,143,098
897 A 4,143,099
899 4,143,100
927 R 4,143,101

CLASS 261

50 A 4,143,102

CLASS 264

4 4,143,103
30 4,143,104
51 4,143,105
4,143,106
65 4,143,107
102 4,143,108
112 4,143,109
117 4,143,110
156 4,143,111
249 4,143,112
291 4,143,113
326 4,143,114

CLASS 266

44 4,142,712
87 4,142,713

CLASS 269

8 4,142,714

CLASS 273

1 L 4,142,715
1 R 4,142,716
26 R 4,142,717
30 4,142,718
33 4,142,719
59 A 4,142,720
73 R 4,142,721
101.1 4,142,722
102.2 R 4,142,723
109 4,142,724
123 A 4,142,725
157 R 4,142,726
232 4,142,727
242 4,142,728

CLASS 274

9 B 4,142,730
9 RA 4,142,729

CLASS 277

96.1 4,142,731

CLASS 280

5.26 4,142,732
446 A 4,142,733
615 4,142,734
618 4,142,735
652 4,142,736
747 4,142,737

CLASS 282

27.5 4,142,738

CLASS 285

18 4,142,739
4,142,740
39 4,142,741
136 4,142,742
177 4,142,743
368 4,142,744

CLASS 289

1.5 4,142,745
2 4,142,746

CLASS 290

9 4,143,280

CLASS 292

37 4,142,747
121 Re.29,925
169.15 4,142,748
189 4,142,749
210 4,142,750
217 4,142,751
343 4,142,752

CLASS 293

102 4,142,753

CLASS 294

77 4,142,754

CLASS 296

1 C 4,142,756
1 S 4,142,755
63 4,142,757
91 4,142,758
137 B 4,142,760
4,142,761
137 J 4,142,759
146 4,143,281

CLASS 297

84 4,142,762

CLASS 299

1 4,142,763

CLASS 303

6 R 4,142,764

CLASS 307

43 4,143,282
66 4,143,283
213 4,143,284
221 D 4,143,285
238 4,143,286
311 4,143,287

CLASS 308

207 R 4,142,765

CLASS 310

66 4,143,288
156 4,143,289
270 4,143,290

CLASS 312

214 4,142,766

CLASS 313

103 R 4,143,291
336 4,143,292
346 R 4,143,295
409 4,143,293
422 4,143,296
481 4,143,294
502 4,143,297

CLASS 315

3 4,143,298
5.41 4,143,299
39.61 4,143,300
73 4,143,301
205 4,143,302
239 4,143,303
276 4,143,304
379 4,143,305
408 4,143,306

CLASS 318

16 4,143,307
138 4,143,308
571 4,143,310
611 4,143,311
649 4,143,312
807 4,143,309

CLASS 322

28 4,143,313

CLASS 323

15 4,143,314
24 4,143,315

CLASS 324

33 4,143,316
103 P 4,143,317
111 4,143,318
219 4,143,319

CLASS 325

15 4,143,320
67 4,143,321
320 4,143,322
363 4,143,323
429 4,143,324
478 4,143,325

CLASS 328

55 4,143,326
61 4,143,327

155 4,143,328
163 4,143,329

CLASS 329

101 4,143,330

CLASS 330

2 4,143,331
4.3 4,143,332
149 4,143,333

CLASS 331

56 4,143,334
65 4,143,335
94.5 C 4,143,338
94.5 D 4,143,339
94.5 G 4,143,336
94.5 PE 4,143,337

CLASS 333

33 4,143,342
151 4,143,340
157 4,143,341
194 4,143,343
202 4,143,344

CLASS 335

212 4,143,345
213 4,143,346

CLASS 338

28 4,143,347
4,143,348

CLASS 339

1 R 4,142,767
19 4,142,768
88 R 4,142,769
94 M 4,142,770
95 R 4,142,771

CLASS 340

2 4,143,349
5 R 4,143,350
6 R 4,143,351
53 4,143,352
146.1 BE 4,143,353
146.1 E 4,143,354
146.3 AG 4,143,358
146.3 C 4,143,355
4,143,356
146.3 SY 4,143,357
166 R 4,143,359
347 AD 4,143,363
4,143,366
347 CC 4,143,361
347 NT 4,143,362
347 P 4,143,364
347 SH 4,143,365
540 4,143,367
543 4,143,368
711 4,143,360

CLASS 343

6.5 R 4,143,369
7 VM 4,143,370
16 M 4,143,372
16 R 4,143,371
17.1 PF 4,143,373

4,143,375
106 R 4,143,376
755 4,143,377
854 4,143,378
4,143,379
895 4,143,380

CLASS 346

1 4,143,381
76 R 4,143,382

CLASS 350

3.66 4,142,772
3.78 4,142,773
96.12 4,142,774
96.14 4,142,775
96.21 4,142,776
4,142,777
135 4,142,778
184 4,142,779
334 4,142,780
345 4,142,781
354 4,142,782
357 4,142,783

CLASS 351

136 4,142,784

CLASS 352

141 4,142,785

CLASS 354

32 4,142,786
38 4,142,787
51 Re.29,927
53 4,142,788
249 4,142,789
318 4,142,790

CLASS 355

3 SC 4,142,791
14 4,142,792
58 4,142,793
92 4,142,794
106 4,142,795

CLASS 356

28 4,142,796
138 4,142,798
153 4,142,799
250 4,142,800
251 4,142,801
319 4,142,802
346 4,142,797

CLASS 357

14 4,143,383
15 4,143,384
19 4,143,385
22 4,143,386
23 4,143,387
4,143,388
31 4,143,389
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